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BRITISH MEDICAL JOURNAL

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BRITISH MEDICAL JOURNAL

LONDON SATURDAY JUNE 25 1955

British Medical Association

ONE HUNDRED AND TWENTY-THIRD ANNUAL MEETING, TORONTO, CANADA, 1955

President's Address

LEST WE FORGET

"I will set down what comes from her, to satisfy my remembrance the more strongly."—Macbeth, v, i, 35.

BY

THOMAS CLARENCE ROUTLEY, C.B.E., M.D., LL.D., F.R.C.P.C.

On behalf of the members of the Canadian Medical Association may my first words be to welcome most heartily all who have paid us the compliment of coming to Toronto. The British Medical Association last met in this city forty-nine years ago, and on that occasion Professor Irving Cameron welcomed our visitors in the words of an old Indian greeting, which is so appropriate that I will repeat it to you now. "'It is good for us, O Brothers, that you came so far to see us.' To our open hearts and wigwams you are welcome! May the Gitchie Manitou [the Great Spirit] have you in his keeping while you sojourn with us, and bring you, returning with filial piety and devotion to the care and protection of your own lares and penates, safe again home."

We in Canada are proud of our place in the British Commonwealth of Nations and are anxious to do our full share, whatever it may be, in strengthening the ties which bind us together. Last year our Prime Minister, the Right Honourable Louis St. Laurent, encircled the globe in order that he might extend Canada's greetings to various parts of the Empire (I still like that word) and learn, first hand, of the problems which await solution in promoting and building better understanding and closer co-operation between us. Surely a gathering such as this, which brings outstanding representatives of many parts of the Commonwealth together, can and will do much to foster and advance our common desires and aspirations.

Again let me say how very happy we are to extend the right hand of fellowship not only to our brothers and sisters of the Commonwealth but also to our only slightly more distant relatives from south of the border. In 1930 a speaker at the British Medical Association meeting in Winnipeg referred to the duty and also the privilege of Canadians to endeavour to interpret the British Commonwealth to the United States of America. We are happy to think that we do constitute a friendly link between these two important elements of the free world, and that we may play some small part in advancing harmony and understanding between them.

My next words must be to thank you most sincerely for the great honour you have done me in electing me to the Presidency of the British Medical Association. I like to think of this honour as one that I share with the members of the Canadian Medical Association, who so kindly nominated me for the position, and who, together with me, constitute your hosts at this meeting. On their behalf I can promise one thing—that I shall serve you as best I can without holding back my time or my strength. I am yours to command for any service which you may consider to be appropriate to this high office.

Of the duties which you lay upon me in the coming twelve months, few will present such difficulties as the address which, by custom, the President gives at his installation. The *British Medical Journal* once said: "Presidents must find it increasingly difficult as year follows year to find anything to speak about that has not furnished matter for the eloquence of preceding orators. . . . There is not for the moment, in the somewhat narrow sphere which custom allows the President of the Association, any new thing on which he can discourse." These words were not written recently for my encouragement or comfort, but in 1897 when the B.M.A. first met in Canada. Since then, close upon sixty Presidential Addresses have been given, and the field has, if possible, been even further narrowed. If, then, there is nothing new that I can say to you with profit, let me take example from the Man of the Century, Sir Winston Churchill, and look into the past as a guide to the future.

The British Medical Association has met three times previously in Canada—in 1897 in Montreal, in 1906 in Toronto, and in 1930 in Winnipeg. Now to our great joy you come back to us again. The year 1897 seems very far away to us; perhaps I can indicate how far away and yet how near it is by relating it to one man whose name I have already mentioned, and whose career spans all of this epoch. In 1897 Winston Churchill was a soldier serving his country in India, and already had been mentioned in dispatches for his valour. In 1906, when last you met in Toronto, he had exchanged his cavalry saddle for the leather bench of Westminster and was Under-Secretary of State. In 1930 he had just relinquished the office of Chancellor of the Exchequer,

and to the undiscerning his day was done; for as the public said, "He is already middle-aged." How wrong the undiscerning were! How amazingly wrong people sometimes can be!

A Look into the Past

May we, then, take a look into the medical past and, without venturing too far into fields of science into which my feet are not accustomed to stray, recall something of the medical scene at the time of the three previous meetings in Canada.

It is interesting to note the names of some of the sections of these meetings. In 1897 all of the basic sciences—anatomy, physiology, pharmacology, pathology, and bacteriology—were represented, although for some curious reason the anatomists were discussing anaesthesia. By 1906 the anatomists had parted company with the physiologists, and by 1930 they had bowed themselves off the stage altogether, while the physiologists had allied themselves with the pathologists and bacteriologists and had got the worst of the bargain, for there was little pure physiology on the programme. Now all these sections are gone. I do not quite understand what their departure portends unless it be that, though nameless themselves, they have assumed roles of importance within other sections.

In 1897 the subject we now call preventive medicine had a section called Public Medicine, and the talk was all of sanitation—pure water, pure milk, sewage disposal. We whose countries are represented at this meeting have outgrown that limited concept of public health, though I would remind you that elsewhere within our Commonwealth, and in a great many underdeveloped parts of the world, such problems still require solution, as witness the motto for World Health Day this year—"Clean water for better health." By 1906 the section had changed its name to State Medicine, suggesting that this was a part of medicine for which the State, and not the individual, should be responsible. Since those days the State has developed various ideas in various countries as to its responsibility, and the name of the section has veered round to what most members of the profession would consider to be its proper title—namely, Preventive Medicine.

Another significant change through the years has been the replacement of the name "Diseases of Children" by "Child Health," in line with the positive definition of health as propounded by the World Health Organization.

In 1897 there was a Section of Psychology, which discussed the evolution of the mind. By 1906 its field was what we might now call neuropsychiatry, for it discussed neurological topics like epilepsy, as well as hallucinations and delusions. By 1930 the separation of neurology from psychiatry had begun, and the section was called Mental Diseases and Neurology, though a discussion on mental changes at the menopause was opened by a neurologist. Now the divorce of the neurologists from the psychiatrists is complete, and I doubt whether either would care to invade the territory of the other.

Of the sectional newcomers to the field since 1930, one at least has a very ancient lineage. I refer to the Section of General Practice. As you know, of recent years the general practitioner has begun to realize that the branch of the profession which he follows is as much a specialty as the practice of surgery or psychiatry, and that he must give heed to the development of his specialty, to the training necessary for good general practice, and to the means of gaining the maximum intellectual satisfaction from his job. In the United States of America, in the United Kingdom, and in Canada he has taken steps by the formation of a College or Academy to foster these laudable aims. We are happy to see that this meeting is to make a contribution towards this fundamentally essential movement.

I should like to mention another section, that of Occupational Medicine, which has grown up since 1930. Like the practice of psychiatry, which has marked off its territory and expanded out of all recognition in the last few decades, the specialty of occupational medicine, embracing a relatively new programme of rehabilitation which has been described as the third phase of medicine (preventive and curative being the first two phases), surely merits a section of its own. Indeed, might we not say that occupational hazards now confront not only the industrial worker, a person of growing importance in our economy, but also, with the increasing use of toxic pesticides, the agricultural worker, on whose efforts the wealth of Canada and many other parts of the Commonwealth so greatly depends? And fresh hope appears to be rising for that vast army of persons who, because of physical or mental disability, have so frequently been written off as expendable.

Two sections have disappeared since 1930. One, labelled rather strangely as "Medical Sociology and History of Medicine," concerns me personally, as I was invited to open a discussion at the Winnipeg meeting on migration within the Empire, a subject which, from time to time over the years, has attracted varying degrees of attention. In passing, one wonders whether, at our next conjoint meeting in Canada, there will be included a section on Social Medicine (not Socialized Medicine) as a successor of Medical Sociology, or whether the difficulty in defining this field will preclude its separation from the existing specialties. There is need for clear thinking and sound leadership by the medical profession in the broad field of social medicine, embracing as it does the important aspects of public relations and medical economics.

The other section no longer with us is that of Tuberculosis. Over many phases of the 1897–1906 meetings the white plague cast its dark shadow. In 1930 no fewer than three sessions were devoted to this disease; they met at a time when the Lübeck tragedy had just occurred. You will recall that, through a tragic error, a large number of Lübeck children met their death after B.C.G. vaccination. This event cast an unwarranted suspicion on a method which is currently being employed successfully on millions of persons every year. Since you last met in Toronto the picture of tuberculosis has been considerably modified, mortality having declined by more than 80%. Early diagnosis, the discovery of antibiotics, the progress in chest surgery, and the development of rehabilitation services have gone far towards lifting the terror from this one-time scourge and given us courage to think that tuberculosis can be conquered completely. However, until that happy eventuality occurs we must not be lulled into complacency and there must be no let-up in the attack upon the disease.

Surgery, 1897–1930

What were the surgeons talking about at these meetings? In 1897 the emancipation won for them by Lister, a most popular figure at the Montreal meeting, was being chiefly applied in abdominal surgery. Surgeons were vying with each other in daring excisions of abdominal organs. Christopher Heath, in an address, complained that surgeons were not troubling to diagnose but were operating "to clear up the case." A contemporary remarked that the names of the new gall-bladder operations were simply terrible and fit only for Welsh villagers! Surely this was a left-handed compliment to our Welsh friends, who are so adept in the handling of curious-looking words.

By 1906 the surgeons had begun to invade the skull, and the surgical star at the Toronto meeting was Sir Victor Horsley, the pioneer neurosurgeon of whom someone said, "He does not quote the literature; he is the literature."

By 1930 the surgeons had discovered the autonomic nervous system, and the age of "physiological repair" had begun. They had also penetrated the chest, and a major theme at the meeting was thoracic surgery. Now even the secret places of the heart are no longer a mystery to them, and one is pleased to note that the profession on both sides of the water is well represented on the symposium on cardiovascular surgery which is to be held this week. What worlds are left for surgery to conquer? I do not

know, but I am certainly not rash enough to suggest that there are none. Who in 1897 or 1906, or even as late as 1930, could have predicted some of the amazing advances that have taken place in the broad field of medical science since then? Hope springs eternal, and surely history reveals that hope has been considerably rewarded during the past 50 years in the fight against disease.

Revolutionary Changes in Therapeutics

In 1897 the President of the Section on Internal Medicine lamented the fact that scientific therapeutics had very little influence on treatment, but predicted hopefully and confidently a brighter future. In 1906 Dr. R. A. Reeve still lamented the fact and took a somewhat dim view of the progress being made. One might recall that even the first of the magic bullets of chemotherapy, salvarsan, was still unknown. Indeed, as someone said in 1897, "The microbe of syphilis is still wanted by the scientific police." The 1906 meeting was not sure that the spirochaete, then exacting a terrible toll we scarcely realize to-day, was the cause of this disease. As a sidelight on the revolutionary changes in therapeutics, one might point out that none of the ten drugs discussed at the British Pharmaceutical Congress of 1897 is regularly prescribed to-day, and some are absolutely unknown to modern students; not one of the hypnotics recommended in 1897 in the treatment of insomnia has stood the test of time.

In his delightful historical address appearing in the *British Medical Journal* of January 1, 1950, Sir Henry Dale, whose presence at this meeting is such a joy to us all, in discussing the progress of medical science for the first half of this century, reminds his readers that shortly after the turn of this century therapeutic empiricism was still strongly entrenched. Listen to his words. "Look back, those who can do so, to the beginning of this century, and recall again the state of medicinal treatment 50 years ago. Heart tonics, purgatives, diaphoretics, analgesics—such, indeed, were in use, and could be reasonably credited with the promotion of a natural function, or the relief of a distressing symptom; but there was a wide range of remedies then still current for which nothing more definite than a generally 'tonic' or even 'alterative' action could even be suggested. The idea that a remedy could directly remove or neutralize the cause of an illness was still a startling innovation, and neither physician nor patient had yet learned to expect a medication which would go thus to the root of the trouble."

Continuing, Sir Henry said: "Our successors, viewing the times in which we live from the longer perspective of history, are likely to recognize the first half of the twentieth century as the period in which civilization first began to feel, for good or ill, the full impact of progress in the natural sciences. . . . The end of the nineteeth century found medicine still a body of largely empirical knowledge." In 1900 it was "not unreasonable for the student then entering the wards to receive, as I did, the authoritative warning that it was his duty to forget the teachings of the experimental sciences of physiology and to accept those of medicine as still an empirical art."

"The remedies which were being administered in 1900 had almost all come into use as the result of empirical observation. . . . 'I don't pretend to explain it, but I have seen it do good.'"

Since that time the improvement in morbidity and mortality statistics pays glowing tribute to the advances made in medical science, and the acceptance of this knowledge by the medical profession.

The rapidity with which new and effective therapeutic agents appear is dramatically revealed by the fact that 70% of the drugs prescribed on this continent last year were unknown fifteen years ago.

At the Cross-roads

At the 1930 meeting the profession stood at the cross-roads with regard to the therapy of infections. The participants in the Winnipeg meeting were obviously sceptical of therapeutic vaccines and sera, but for another five years, until Domagk produced the first sulphonamide, there would be nothing to put in their place. In 1906 typhoid fever was beginning to show signs of being on its slow way out, although the 1930 meeting referred to an epidemic in Canada of serious proportions in the previous year. In 1930 diphtheria was definitely losing its hold; and Canada, as represented in particular by the City of Hamilton, can take credit as a pioneer in its eradication by toxoid. And now, on the threshold of this meeting, comes the heartening news of the success which has attended the efforts of Salk and his fellow workers in the fight against anterior poliomyelitis. I am sure we all join with a grateful world in extending words of appreciation and praise to those responsible for this newest advance in the conquest of one of the most terrible of all diseases.

The Degenerative Diseases

As infections one by one were being brought under subjection, the degenerative diseases gained in importance. Obesity and coronary diseases are down for discussion at this meeting. In this connexion one might recall the dictum of Sir James Barr, in his address on overweight at the 1906 meeting, that "a life of indolence and luxury is more deleterious to the circulation than the work of a navvy." Coronary disease was still quite a novelty in 1930, while to-day the well-informed layman speaks of it with considerable familiarity.

There is one disease which has been with us at all previous meetings, is with us here, appears to have grown steadily commoner since 1897, and, sad to say, is still undefeated. I refer to cancer. We all long for the day when it will no longer appear on the scientific programmes as an unsolved problem; may that great day come soon. But the picture is not all dark. We know that bits and pieces of scientific knowledge gained in painstaking research are being put together, offering some hope that this death-dealing riddle may be solved in the not-too-distant future.

Medical Education

What of medical education? It has appeared in some shape or form on all three previous programmes here in Canada. I say in some shape or form because on no occasion was the subject discussed as an integral whole. Individual sections sniped at their medical schools, but largely from the standpoint of their own specialty. Thus, in 1897, Japp Sinclair, the obstetrician, said: "Students learn surgery which they will never practise, and will practise midwifery which they have never learned." In 1906 the anatomists agreed that they should "avoid entangling the student in a superfluity of detail." Obstetricians were still dissatisfied, and complained that poor teaching was a result of the "ingrained idea that labour is a natural process."

In 1930 the emphasis was on teaching in public health, but a full-scale discussion on the curriculum as a whole awaited the First World Conference on Medical Education organized by the World Medical Association, and held in London under the auspices of the British Medical Association in the autumn of 1953, and about which I propose to speak in some detail a little later on in this paper. In passing, it is interesting to note that there will be a Second World Conference on Medical Education held under the auspices of the World Medical Association on this continent four years hence. Meanwhile, I shall be surprised if someone at this meeting does not voice his dissatisfaction with the present curriculum.

Debt to the Motherland

At this point I should like to place upon the record the great debt we in Canada owe to the Motherland for the help, stimulation, and guidance given to medical education in this country. Indeed, history reveals that in the basic essentials many of our medical schools adopted from the

Motherland not only your methods of teaching and curriculum but also imported a considerable number of your graduates as faculty members. We are proud of the standard attained by our twelve medical schools, and we thank you for the part which you have played in helping to develop and strengthen them.

You may wish to recall something of the organizational aspects of the Association at the dates about which we have been speaking. In 1897 the British Medical Association was a flourishing organization, but it had its critics, for an editorial in *The Times* of London dismissed it as an "inert mass," and stated that it had done little "either for the benefit of the medical profession or for that of mankind." This is neither the first nor the last time that the Press has erred in the statements upon which it has based its criticism of the profession. However, here in Canada we are rather proud of our relations with the Press, though I would not for a moment wish to convey to you the impression that they always compliment us. On the contrary, they sometimes take us to task; but our knowledge of each other's obligations and responsibilities has increased and improved, particularly in recent years, and we rely upon the Press to assist us in spreading helpful information and facts bearing upon the health of the people.

In 1906 the British Medical Association was applying for a Royal Charter. It was also talking of reforming its constitution. I understand that such reform is again under consideration, though I have no intention of entering into the discussion.

Six years prior to the Winnipeg meeting the present relationship in which the B.M.A. and the C.M.A. became affiliated had been reached. In the words of the late Dr. Alfred Cox, "A marriage between the two Associations, with the word 'obey' left out, was arranged in 1924." And here let me say that much credit for the affiliation must be given to Sir Jenner Verrall and Alfred Cox, who, as ambassadors from the British Medical Association, visited Canada for the purpose of discussing the subject, and by their knowledge, skill, and diplomacy were very largely responsible for the consummation of a marriage which, for more than thirty years, has been so happy and harmonious.

At the 1930 meeting there was much preoccupation with medical costs. "The economic organization of medicine," said the President, Dr. Harvey Smith, "has not kept pace with scientific progress. In my judgment there is only one possible solution—voluntary health insurance, instituted, organized, and controlled by the medical profession, and widely applied."

Plans for health insurance were already under study in some of the western provinces of Canada, and the British Medical Association at home was discussing a medical service for the nation. On both sides of the Atlantic we have gone a long way since then; and later on in this meeting Canadians will hear with interest something of the present position in the United Kingdom. We in Canada have witnessed a remarkable growth in the voluntary plans of health care during the past 25 years, with more than one-third of the population now covered in whole or in part by such schemes.

International Medicine

Two outstanding international events in medicine have taken place since 1930, and it has been my privilege to play a small part in both, right from the beginning. I refer to the founding of the World Health Organization and the World Medical Association. A precursor of the former was the Health Division of the old League of Nations, which in the opinion of some observers formed the most effective part of the League, while the precursor of the latter was L'Association Professionnelle Internationale des Médecins, which was organized in 1926 with the support of a number of medical associations, mostly in Europe, and which did good work until forced to disband in 1939 with the outbreak of the second world war. It seems appropriate to say something about these two organizations on this occasion for two reasons—firstly, because of their great importance in their respective fields, and, secondly, because of the vital part which the medical profession has played, and must continue to play, in their usefulness. Here may I interpolate that I am indebted to Dr. M. G. Candau, Director-General of the World Health Organization, for much of the information I have used in speaking of that organization.

The World Health Organization

Combining the functions of former organizations in the field of international co-operation on health matters, the World Health Organization, one of the specialist agencies of the United Nations, was founded at an International Health Conference in New York in 1946. For two years it functioned under the direction of an Interim Commission, emerging as a full-fledged organization in 1948, when its constitution had been ratified by the required number of nations. Dr. Brock Chisholm, a Canadian who had acted as Secretary of the Interim Commission, was appointed its first Director-General, a post which he filled with great distinction for five years. It is the first world-wide body of its kind in history. In amplifying its title, it defines health as "a state of complete physical, mental, and social well-being, and not merely the absence of disease or infirmity." With this definition one thinks that the medical profession will concur, as the traditional frontiers of health are pushed forward and enlarged and the close relationship between health problems and economic and social conditions is fully recognized.

The Organization's objective is "the attainment by all peoples of the highest possible level of health." Its functions are: (1) to co-ordinate international health work; (2) to propose and administer international regulations on health matters; (3) to provide technical services, including reporting of epidemics; (4) to assist governments in strengthening their health services; (5) to foster mental health activities; and (6) to promote and conduct research in the field of health. It is important to note that the World Health Organization is not a supranational public health service. It works for, with, and through governments in raising health levels, and is responsible to the United Nations.

The Organization, although not 10 years old, may look with pride to a number of achievements. Time will permit of but a brief reference to some of them. It has promoted maternal and child health and welfare services in many parts of the world, particularly in the underdeveloped and war-devastated countries. In the fields of nutrition, sanitation, and environmental hygiene, and in the fight against widespread infections such as tuberculosis, venereal disease, malaria, and yaws, it has assisted in saving many thousands of lives. Opportunities by way of fellowships for advanced training in various branches of the healing arts have been provided to hundreds of students, many of whom have had the privilege of studying in foreign countries, thus gaining not only new technical knowledge but also a broader outlook on the world as a whole. In the fields of sanitation, vital statistics, medical nomenclature, and biological and pharmaceutical standards much useful work has been accomplished. And its work has only begun. Granted that it receives adequate financial support, adheres to its laudable purposes, is allowed to work out its destiny without undue political influence or interference, and continues to merit the respect, confidence, and support of the healing professions, it can look forward hopefully to a future of much usefulness.

The World Medical Association

Paralleling the development of the World Health Organization, the World Medical Association had its inception in London in the autumn of 1946, when, upon the invitation of the British Medical Association, 100 delegates from 32 national medical associations, meeting together for a week,

unanimously decided that a world-wide organization of national medical associations should be established so that medicine might speak with a united voice.

The aims and objectives of the Association may be summarized as follows:

To raise the standards of medical education and care throughout the world.

To raise the level of public health throughout the world.

To improve the standards of industrial and occupational health programmes in all countries.

To co-operate with the World Health Organization, the International Labour Organization, and similar bodies on matters of mutual interest.

To assist all mankind to attain to the highest possible level of health and in the pursuit of its objectives to promote world peace.

To-day, fifty-one national medical associations are members of the World Medical Association, and the number is growing yearly. As one of our outstanding members put it, "If there weren't a World Medical Association, one would have to be invented, because there is necessity for the medical profession to be heard at the international level."

The Association has no selfish motives, covets no preferment, and is not interested in a *quid pro quo*. Opportunities to protect and to improve health and to save lives is all that it seeks, fully believing that a healthier and happier world population is more likely to live at peace with its neighbours.

"Does the World Medical Association overlap the World Health Organization?" is a question one not infrequently hears. The answer is, decidedly not at all. On the contrary, W.M.A. is just as essential to W.H.O. as electric power is to a transmission line. Together they can accomplish much. And W.M.A. is committed in its constitution to co-operate fully with W.H.O. in those areas of mutual interest which require the services of the medical profession.

Among the accomplishments of the Association in its relatively short existence may be listed the following:

Establishment of a head office in New York City with a well-organized secretariat under the capable direction of Dr. Louis H. Bauer, a Past President of the American Medical Association.

Formulation and adoption of an International Code of Medical Ethics.

Adoption of a modified Hippocratic Oath, known as the Declaration of Geneva, which has found ready acceptance in most of the free world.

Publication of a bi-monthly journal in the three official languages of the Association—English, French, and Spanish.

Publication of reports of studies on medical education, medical man-power, medical advertising, social security, and others.

Aid in the establishment of new national medical associations in countries where hitherto none had existed.

Establishment of liaison with the World Health Organization, the International Labour Organization, the International Red Cross, and other international bodies who require the sympathetic co-operation of the medical profession to accomplish their purposes.

Supply of badly needed equipment to hospitals and medical schools in war-ravaged countries.

The holding of an Annual Assembly in a different part of the world each year, thus facilitating the discussion of medical problems on a global scale.

World Conference on Medical Education

To this list must be added one other accomplishment thought by many to be the most important activity yet undertaken by the W.M.A. I refer to the First World Conference on Medical Education, which was held in London in August, 1953, devoted to undergraduate medical education. More than 600 delegates registered, representing 127 universities and medical schools from 62 different countries. Approximately 200 participated in the discussions, which, by simultaneous translation, were heard in English, French, and Spanish. The proceedings, now available in book form, provide for the first time not only an assessment of medical education on a global scale but also a stimulus and a guide to all medical educators who may be concerned about the quality and quantity of undergraduate medical education in their various countries.

The theme for the Conference was to be found in the admirable addresses of the President, Sir Lionel Whitby, and one of the honoured guests, Sir Richard Livingstone.

Sir Lionel said, "It is not difficult to draw a brief pen-picture of the ideal medical student; cultured, broadly educated in the humanities, intelligent and intellectual, of transparent integrity, humane and sympathetic, and, above all, one who will love his profession as well as his fellow men and all their weaknesses, their joys, and their sorrows."

Speaking of the timber from which doctors are made, especially of what he happily chose to call the first-rate, Sir Richard Livingstone said, "The human being is a work of art, capable of a quality and beauty of its own, quite apart from any practical purposes to which its powers are put."

In the foregoing two quotations we find surely a superb definition of the ideal doctor. Is it too much to hope that in the days that lie ahead the glory and tradition of our noble profession will be enriched and elevated by generation upon generation of ideal doctors, who will be content with nothing less than the first-rate from themselves and their colleagues? One feels certain that the British Medical Association wholeheartedly and unreservedly stands committed to the support of such a laudable ambition.

Conclusion

And now, one more Presidential Address is ready for the archives. To those who have listened to it, and to any who may read it, let me say once again that while it may contain nothing new it will have served its purpose if it has portrayed, even in a sketchy way, some of the remarkable changes and advances which have been made in the science and the art of medicine since your first meeting in Canada, and also if it conveys to you the deep sense of pride and satisfaction of your Canadian colleagues that the British Medical Association has for the fourth time honoured us by meeting on our soil. Again let me say, "To our open hearts and wigwams you are welcome," now and always.

The Portsmouth Group Hospital Management Committee—one of the largest non-teaching groups in the country—has just issued for the first time a clinical report. This deals with the work of the hospital during the year 1953, and contains much of interest to clinicians and hospital administrators. For instance, the details given about infectious diseases illustrate the changes in the incidence and severity of these infections. The beds available for the treatment of infectious diseases numbered 126. During 1953 76 patients were sent to hospital with a diagnosis of poliomyelitis: in 20 of these cases the diagnosis was confirmed. Six patients admitted because of suspected meningitis proved to be cases of poliomyelitis. There was no case of diphtheria admitted to hospital during the year. Seventy-seven children with pertussis were treated, and three of these died, two of the deaths being in patients under 6 months of age. There were also three deaths from measles, but the total number of patients with this disease amounted to 110. Two hundred and three patients were admitted for the treatment of intestinal infections: the most important clinical group was the so-called acute infectious gastro-enteritis of infancy. Of 61 infants in this group under 3 months of age, four died

CORTICOTROPHIN INTRAVENOUS INFUSION THERAPY IN RHEUMATIC CONDITIONS

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It has long been known that temporary improvement may be observed in rheumatoid arthritis during pregnancy and jaundice due either to obstruction or to hepatitis. Less effective remissions have sometimes been associated with febrile reactions induced by the administration of foreign proteins. Comparable alleviation has also occasionally been observed following surgical procedures. Finally it must be recognized that from the very nature of the disease spontaneous remissions unrelated to any specific therapy may occur. This potential reversibility was discussed by Hench (1949), who indicated retrospectively the reasoning which led to the experimental administration of certain adrenocortical and anterior pituitary hormonal compounds in rheumatoid arthritis. It was in September, 1948, that the now classical experiment of the administration of the adrenal cortical hormone (17-hydroxy-11-dehydrocorticosterone) compound E, or cortisone, to a patient with severe rheumatoid arthritis was undertaken. In 1949 Hench *et al.* reported the rapid and striking improvement in the clinical and other features of the disease from both cortisone and corticotrophin (A.C.T.H.). Later, confirmation of these results followed with the experience of other groups—Thorn *et al.* (1949), Markson (1949), Elkinton *et al.* (1949), Ragan *et al.* (1949), Spies and Stone (1949), and Spies *et al.* (1949) with corticotrophin; Boland and Headley (1949) with cortisone; and Freyberg (1950), Hench *et al.* (1950), Rosenberg (1950), and the speakers at the Seventh International Congress on Rheumatic Diseases at New York, 1949 (1952) (Freyberg, Boland, Rosenberg, Holbrook, and Bauer), with corticotrophin and cortisone.

In all these original reports the corticotrophin was administered by intermittent intramuscular injections. However, a new therapeutic technique of prolonged administration by slow intravenous infusions was later described by Gordon *et al.* (1950), Renold *et al.* (1951), Mandel *et al.* (1951), and Jelliffe *et al.* (1951). The results obtained by these authors in rheumatoid arthritis and other conditions were so rapid and impressive as to suggest a superiority over the usual method of administration. This new method then seemed to be promising as a means of utilizing small amounts of corticotrophin and achieving maximum results. In this respect, 10–25-mg. doses of the ordinary soluble preparations available, administered slowly by the intravenous route, were reported as more effective than 100 mg. daily in divided doses by intramuscular injections. Moreover, it might be argued that this procedure seemed to imitate more closely the natural method of secretion as compared with intermittent (six-hourly) injections.

This paper records our experience with corticotrophin administered by slow intravenous infusion in the treatment of rheumatic conditions, as employed by us since August, 1951, at a time when both this hormone and cortisone were scarce.

The investigation was carried out amidst the ordinary day-to-day working of a busy rheumatic centre. For ethical reasons all the usually accepted methods of treatment have had to be employed—rest, correction of anaemia and other general measures, application of physiotherapeutic procedures, including manipulation, plaster corrective and occupational therapy, and general rehabilitation regimes. The corticotrophin infusions have thus been only a part of the general therapeutic scheme. However, the type of improvement is characteristic enough to present no great difficulty in differentiation and assessment. Our prime endeavour, therefore, was to ascertain how far the employment of the technique in conjunction with other routine methods would augment the total rehabilitation of the patient. A stage has now been reached where sufficient experience has been obtained to enable us to form some conclusions on the place and value of this method of treatment in the general problem of the therapy and rehabilitation of rheumatic patients. We have had to concern ourselves not only with the immediate response of the patients to the course of treatment as recounted here, but, in addition, with methods of maintaining the initial effects where favourable, their duration, and the incidence of relapse. These features will be the subject of further observations and later report.

Material Investigated

Our observations have extended from August, 1951, until October, 1953. All patients admitted to the rheumatic unit were considered for treatment; after diagnosis no selection was made either for the administration of the hormone or in the analysis of results. Although we were mainly concerned with the effects in rheumatoid arthritis, a few other rheumatic conditions were treated—psoriatic arthritis, ankylosing spondylitis, osteoarthritis, "frozen-shoulder" syndrome, and a miscellaneous group consisting of "fibrositis," Paget's disease, rheumatic fever, palindromic rheumatism, psychogenic rheumatism, and Raynaud's syndrome.

Altogether 425 patients (involving 516 separate periods of admission) were treated; their allocation to the various diseases according to sex and age groups is indicated in Table I.

TABLE I.—*Different Diseases Treated*

Disease	No. of Patients	Age Groups (Years)											
		20–29		30–39		40–49		50–59		60–69		70+	
	M F	M	F	M	F	M	F	M	F	M	F	M	F
Rheumatoid arthritis ..	90 239	5	19	15	43	26	56	33	77	10	39	1	5
Psoriatic rheumatism	— 4	—	—	—	—	—	2	—	1	—	1	—	—
Spondylitis	7 6	1	1	4	2	1	—	1	1	—	2	—	—
Osteoarthritis	4 44	—	1	—	—	—	2	2	12	2	19	—	10
Frozen shoulder..	5 8	—	1	—	—	1	2	2	5	1	—	1	—
Miscellaneous* ..	3 15	—	3	1	3	—	1	1	5	1	3	—	—
Total ..	109 316	6	25	20	48	28	63	39	101	14	64	2	15
	425	31		68		91		140		78		17	

* Fibrositis, psychogenic rheumatism, Raynaud's syndrome, Paget's disease, rheumatic fever, palindromic rheumatism.

The rheumatoid arthritis group was the largest, comprising 90 males and 239 females—329 in all. A detailed description of these patients is presented in Tables II and III. The age groups most affected were 40–49 years (82 patients—26 males and 56 females) and 50–59 years (110 patients—33 males and 77 females). The duration of the disease was two to five years for 79 patients (23 males and 56 females), five to ten years for 88 patients (23 males and 65 females), and ten to twenty years for 76 patients (19 males and 57 females). Only 30 patients (10 males and 20 females) had the disease for less than one year.

TABLE II.—*Rheumatoid Arthritis. Functional Capacity Before and After Therapy in Relation to Age Groups*

Age Group (Years)		Class I M	I F	II M	II F	II+ M	II+ F	III− M	III− F	III M	III F	IV M	IV F	Total M	Total F
20–29	Before	—	—	—	2	3	5	—	7	2	4	—	1	5	19
	After	—	7	5	9	—	1	—	—	—	2	—	—		
30–39	Before	—	—	2	4	1	8	8	13	2	16	2	2	15	43
	After	2	13	11	16	1	11	—	2	1	1	—	—		
40–49	Before	—	—	3	5	8	8	7	19	7	18	1	6	26	56
	After	4	10	16	25	5	13	1	3	—	4	—	1		
50–59	Before	—	—	—	2	5	11	14	31	13	19	1	14	33	77
	After	2	9	20	32	9	16	1	11	1	7	—	2		
60–69	Before	—	—	1	3	2	1	3	17	3	13	1	5	10	39
	After	—	2	6	13	2	13	1	7	1	3	—	1		
70+	Before	—	—	—	—	—	—	—	1	1	1	—	3	1	5
	After	—	—	—	—	—	1	1	—	—	3	—	1		
Total	Before	—	—	6	16	19	33	32	88	28	71	5	31	90	239
	After	8	41	58	95	17	55	4	23	3	20	—	5		

TABLE III.—*Rheumatoid Arthritis.—Functional Capacity Before and After Therapy in Relation to Duration of Disease*

Duration (Years)		Class I M	I F	II M	II F	II+ M	II+ F	III− M	III− F	III M	III F	IV M	IV F	Total M	Total F
–1	Before	—	—	—	1	3	3	2	11	5	4	—	1	10	20
	After	1	10	9	6	—	2	—	2	—	—	—	—		
1–	Before	—	—	3	1	—	3	7	13	1	5	1	2	12	24
	After	3	5	8	11	—	7	—	1	1	—	—	—		
2–	Before	—	—	2	8	5	10	8	15	7	16	1	7	23	56
	After	—	14	15	18	5	15	3	5	—	3	—	1		
5–	Before	—	—	1	4	8	11	8	22	6	21	—	7	23	65
	After	2	5	17	35	3	16	—	4	1	4	—	1		
10–	Before	—	—	—	2	2	3	5	13	6	8	2	6	15	32
	After	2	4	5	13	6	6	1	1	1	8	—	—		
Over 15	Before	—	—	—	—	1	3	2	14	3	17	1	8	7	42
	After	—	3	4	12	3	9	—	10	—	5	—	3		
Total	Before	—	—	6	16	19	33	32	88	28	71	5	31	90	239
	After	8	41	58	95	17	55	4	23	3	20	—	5		

In the rheumatoid arthritis group the duration of in-patient treatment varied from one to sixteen weeks. The usual periods were two to four weeks for 122 patients (22 males and 100 females) and five to eight weeks for 115 patients (22 males and 93 females). Only 25 patients (7 males and 18 females) were admitted for longer than twelve weeks. In the above group of 122 patients gold had previously been administered to 60 (9 men and 51 women), and in the group of 115 patients to 56 (8 men and 48 women). In the whole rheumatoid arthritis group of 329 patients, 165 (44 males and 121 females) had received previous gold therapy. Readmission for further infusion therapy on account of relapse was considered necessary on one or more occasions for 59 patients. This must not be regarded, of course, as the full relapse proportion.

Treatment

The great majority of our patients received the Armour Laboratory preparation "acthar," others the Organon, Wilson, or Crookes Laboratory material; some patients received preparations from two different laboratories according to the availability of supplies. With the usual precautions the ordinary (intramuscular) powdered hormone was dissolved in sterile normal saline (about 2 ml.), which was injected into the manufacturer's rubber-capped phial (for the Organon hormone sterile water had to be employed, as this particular material was supplied diluted with sodium chloride). The corticotrophin solution was then transferred to the infusion flask containing the vehicle. Nearly two-thirds of the patients received a total quantity of one litre of fluid in each infusion, the remainder one pint (568 ml.). After preliminary trials with various vehicles, the final choice was normal saline. More than one-half of the patients received infusions with normal saline as the vehicle. In the beginning blank infusions were administered for control and comparison in some cases. No benefit was obtained by the patients from such administrations. In fact, the difference was apparent to them as well as to us through the absence of certain trivial but well-recognized accompaniments of the corticotrophin infusions.

Variations were made in the amount of corticotrophin in the infusions ranging from 25 mg. down to 5 mg. in an attempt to find the optimum dose for maximal clinical effect. We observed clinical responses with low dosages, such as 5 mg. Eventually, in view of variations in individuals, as well as possibly in material, 20 or 25 mg. was regarded as the standard dose, administered in one litre of normal saline. The entire 425 patients treated received a total of 1,490 infusions, and the total amount of corticotrophin used was no more than 28.12 g. Of the 1,231 infusions administered to the rheumatoid arthritis group of 329 patients, 738 infusions each contained a 20-mg. dose of corticotrophin and 229 a 25-mg. dose.

During any one admission the number of infusions administered to a single patient varied from 1 to 11; the total dosage of corticotrophin ranged from 10 to 227.5 mg. The most usual practice was to administer three infusions; actually this was the procedure in nearly one-third of the admissions.

As there was some experimental evidence that infusions prolonged beyond eight hours were more effective in terms of adrenocortical stimulation, variations were also made in the duration of administration. In a few instances the administration was prolonged even up to 72 hours. On the whole, the patients tolerated this well. A few permitted themselves little sleep or movement in their desire not to disturb the needle and connexions; some became apprehensive about the successful delivery of the drip during such lengthy periods. Further, these prolonged drips often resulted in local venous thrombosis. When all these factors were taken into account the optimum period was considered to be 18 to 24 hours. Thus, in actual practice, of the 1,231 infusions administered to the rheumatoid arthritis group, 507 were of this duration; 484 were of shorter and 240 of longer duration.

Second and subsequent infusions were given according to the individual response and the possible tendency to early relapse. The usual number of clear days intervening between the cessation of one infusion and the beginning of the next was six (four to seven). The duration, frequency, and number of infusions given were individualized according to the aims of treatment in relation to the particular problem presented by each patient. The necessity for administration of another infusion was thus indicated by (1) an obvious decrease in the beneficial effect obtained by the previous infusion, or (2) the desire to continue therapy until no further real benefit was obtained, or (3) in some cases an attempt to obtain amelioration, if possible, in a residual refractory joint. It will be appreciated that, no matter how much relief of pain and freedom of movement is obtained from an infusion, repair and re-education of atrophied muscles necessarily require some considerable time. Thus this therapy must be complemented by physiotherapeutic and rehabilitation procedures, which in turn are facilitated by reinduction of a waning remission.

In the early stages efforts were made to minimize the most frequent complication—local venous thrombosis—first by the change of glucose–saline to saline as the vehicle, and secondly by the addition of heparin to the infusion solution. This latter procedure resulted in flocculation; as heparin readily unites with protein compounds, it was then felt that an undesirable chemical interaction might have occurred, and the method was abandoned. Later, however, Linquette *et al.* (1952) apparently successfully added heparin, 200–400 mg., to each infusion. Recently heparin has been added to the infusion material without any apparent *in vitro* reactions. As indicated above, we now routinely use normal saline as the vehicle. Local thrombotic complications are now much less frequent.

In the beginning, because of the fear of sodium retention and oedema, restriction of salt in the diet was enforced, but later, when this procedure was relaxed, no untoward effects were observed. A full generous diet was allowed to all patients, unless suffering from obesity.

Attempts have been made to maintain improvement achieved by the corticotrophin drip method by the subsequent employment of certain other measures—for example, intermittent injections of adrenaline in oil or hyperduric adrenaline, gold compounds, or long-acting corticotrophin compounds, oral administration of para-aminosalicylic acid, sodium salicylate, or phenylbutazone, and in some instances frequently repeated corticotrophin infusions or cortisone. These procedures are still being studied and modified, and it is hoped that the results will be reported later.

Accompaniments, Side-Reactions, and Complications of Therapy

In a total of 1,490 separate infusions no serious complications have arisen. On three occasions a moderately severe reaction took place, consisting of feelings of malaise and coldness, shivering, and pyrexia. This may have been due to impurity of the particular preparation in its protein content. Subsequently infusions were successfully given to these patients. More recently, a patient experienced a similar but very mild reaction with one particular preparation, but an alternative preparation of different manufacture was satisfactory.

The most annoying complication of the technique was the development of local venous thrombosis. Following multiple infusions this resulted in increasing difficulty. In advanced deformed and difficult cases, where repeated courses of treatment might be desired, it could be the limiting factor so far as the intravenous route was concerned. Full use therefore had to be made of the small veins on the dorsum of the hand in some cases. On one or two occasions it was necessary to resort to the venesection technique or to a subcutaneous infusion with the aid of hyaluronidase. The possibility that both corticotrophin and cortisone may alter the coagulability of the blood has received consideration by others. Rawls (1951), in a large series of patients treated with ordinary corticotrophin or cortisone, found the incidence to be 3%. Ragan (1952) and Chatterjea and Salomon (1954) also have drawn attention to the development of thrombo-embolic phenomena. During corticotrophin or cortisone therapy, Cosgriff *et al.* (1950) and Cosgriff (1951) observed an increased coagulability of the blood, which persisted for several weeks after withdrawal. However, the work of Smith *et al.* (1950) and McGraw *et al.* (1952) suggested two opposing coagulation effects; while Fahey (1951), and more recently Sussman *et al.* (1954), found no alteration in blood coagulability.

Oedema, production of hypertension, aggravation of existing hypertension, alteration in facial contour, and changes in mineral metabolism were not encountered. Abdominal cramps occurred in one patient during two successive infusions, but not in other patients receiving material from the same batch. At least three patients with a definite dyspeptic history were treated without ill-effect; one had had a partial gastrectomy, and one suffered from cardiospasm.

Mild glycosuria during the day of the infusion and sometimes part of the following day was often noted. No permanent disturbance of sugar tolerance was observed; indeed, we have applied the method to known diabetic arthritics without any particular troubles other than some slight modification of insulin dosage for a day or two.

Certain other accompaniments were often reported—a temporary feeling of fullness or tightness in the frontal and temporal regions of the head, a "salty" parched taste in the mouth, and feelings of heat and flushing, especially of the face and extremities, often with sweating, and lasting several hours during the infusions. A feeling of hunger some hours after the start of the administration was frequently mentioned. All the patients took their meals well, and all but the very apprehensive generally slept well while the infusions were running.

We have had no experience of the development of potassium deficiency. Muscle weakness, fatigue, or paraesthesiae which would indicate such a complication were not complained of by the patients. Blood potassium serial estimations and electrocardiograms would be helpful if a particularly long course of frequent high-dosage infusions was contemplated.

In summary it may be said that the method has been found safe. There has been no hesitation in its use when this was justified by the rheumatic condition. It has been withheld only in extreme cases of congestive cardiac failure. Hypertension, diabetes mellitus, and impaired renal function have not been regarded as contraindications. Signs of hypercorticism were never induced. In this respect it may be noted that only after daily infusions in doses of 5 to 20 mg. for periods of 6 to 25 days, yielding total dosages of 68 to 500 mg. of corticotrophin, did Cohen and Sulman (1954) find mooning of the face in five out of eight patients. Early signs of hypercorticism were observed by Mandel *et al.* (1951), who also employed daily drips in a similar dose range and total corticotrophin amount. It will be observed that our total dosage range was much smaller than that employed by either of the above groups, and, moreover, was administered intermittently in fewer infusions spread over a longer period of hospital admission.

Scheme of Analysis of Results

In our recognition of the importance of using some generally appreciated standards by which judgment could be passed on the therapeutic efficiency of the technique, we decided to employ, with a slight modification, the scheme recommended by the American Rheumatism Association (Steinbrocker *et al.*, 1949) so far as the cases of rheumatoid arthritis were concerned. Thus, according to this scheme there has been recorded the anatomical stage (which rarely was altered), the activity, and the assessment of the functional capacity before and after treatment. It is, of course, well recognized that a considerable degree of functional improvement may occur and yet the anatomical stage of the disease remain unaltered. It is therefore the induced remissions and the improvement in pain, stiffness, mobility, and hence the functional capacity, which have been of most interest to us.

Briefly, the anatomical stages were delineated by the following criteria: in Stage I (early), no destructive changes, radiologically; in Stage II (moderate), radiological evidence of osteoporosis with or without slight subchondral bone destruction, slight cartilage destruction, and limitation of joint mobility without deformities; in Stage III (severe), radiological evidence of cartilage and bone destruction and osteoporosis and joint deformity; and in Stage IV (terminal), fibrous or bony ankylosis. While the rheumatoid process usually advances to an approximately similar degree in multiple joints, sometimes two or more stages may exist in different joints in the same patient. It has been recommended that the stage should be determined by the state of the worst joint. We have modified this in so far as one advanced single joint—for example, an ankylosed interphalangeal joint—or a terminal condition of certain joints in a patient requiring treatment because of active, less advanced, but progressive arthritis in other joints has *not* determined the anatomical stage for the patient as a whole.

For the classification of functional impairment, the American scheme has been modified by the division into three subgroups (II, II+, and III−) of Class 2 (functional capacity adequate to conduct normal activities despite the handicap of discomfort or limited mobility of one or more joints). The classification utilized in this investigation was therefore as follows:

Class I.—Complete functional capacity, with ability to carry on all usual duties without handicaps.

Class II.—Functional capacity adequate to conduct normal activities despite handicap of discomfort or limited mobility of one or two joints.

Class II+.—Functional capacity adequate to conduct most or all of the usual duties and activities with considerable discomfort or limited locomotor ability of joints.

Class III−.—Functional capacity adequate to conduct some of the normal duties with considerable discomfort or limited locomotor activity of joints *or* ability to carry out some handwork with little or no locomotor ability (for example, kneeling, climbing) *or* fair locomotor activity with little or no handwork.

Class III.—Functional capacity adequate to perform only little or none of the duties of usual occupation or self-care.

Class IV.—Largely or wholly incapacitated, with patient bedridden or confined to wheel-chair, permitting little or no self-care.

Some of the basic features, of which full details are given in Tables II and III, may now be summarized. Of the total 329 rheumatoid arthritis patients, 120 (32 males and 88 females) were graded as Class III− and 99 (28 males and 71 females) as Class III. In the age groups 40 to 49 years 26 patients (7 males and 19 females) were in Class III−, and 25 (7 males and 18 females) in Class III; and in the age group 50 to 59 years, 45 patients (14 males and 31 females) were in Class III−, and 32 (13 males and 19 females) in Class III.

In the 2 to 5 years' duration group, 23 patients (8 males and 15 females) were in Class III−, and 23 (7 males and 16 females) in Class III; and in the 5 to 10 years' duration group, 30 (8 males and 22 females) and 27 (6 males and 21 females) were in Class III− and Class III respectively.

Results

Where benefit accrued from the treatment, the majority of the patients experienced a striking improvement after the first infusion, which subsequent infusions maintained with little or no increase; however, as indicated above, recovery and repair of atrophied muscles show a relatively slow progress, and the maintenance of the improved status is necessary for rehabilitation. Some few others showed gradually increasing benefit from a succession of infusions. A few patients who had shown no improvement with intramuscular administration of the hormone derived benefit following infusions.

Euphoria was a feature induced in most patients. We regarded this as a valuable contribution in the rehabilitation of a patient previously depressed and apathetic. Relief of joint pain and tenderness were obtained with resulting ease of movement. In some cases the actual increase in the range of movement was not great, but the ease of movement, the resulting feeling of satisfaction, and the recognition of what was still functionally possible in the diseased joints were of extreme importance in the encouragement of the patients, the improvement of their outlook, and the simultaneous development of a physiotherapy regime. Other important features were the sense of increased physical well-being, improvement in appetite, and the dissipation of malaise.

Experimental confirmation of the effect on the peripheral circulation was obtained. The resting digital circulation, as indicated by serial skin temperatures, was increased, and the previously sluggish induction of peripheral vasodilatation in the thermal response test of indirect heating was improved following a corticotrophin infusion (Beattie and Woodmansey, 1953).

As might be expected in rheumatoid arthritis, in general the anatomical status of the patient was not notably altered. At most an occasional patient might be assessed as passing from one stage only to the one above. An alteration in the anatomical stages occurred 25 times among females and 11 times among males—a total of only 36.

In rheumatoid arthritis the greatest alteration occurred in the functional capacity. The detailed assessments before and after treatment are presented in Tables II and III with reference to age groups and duration of disease respectively. The overall improvement in the functional assessments can be appreciated from Fig. 1 and Table IV. No patient was designated as of Class I status functionally before treatment, but attainment of this class occurred in 15% of the whole group. An elevation after treatment up to Class II or I was obtained in 57% of the whole group. Improvement of some degree was obtained in 89% of cases. Both males and females showed a similar response. Patients previously treated with gold reacted in a similar manner to those who had not had this therapy (Fig. 1).

Owing to the absence of selection of patients it was not possible for the results to be assessed in sufficient detail

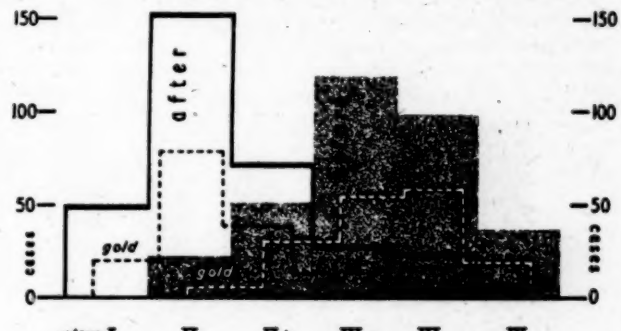

FIG. 1.—Change in functional capacity after treatment. The number of cases in the various classes previously treated with gold is indicated by the broken line, both in the shaded portion (before treatment) and the unshaded portion (after treatment) of the histogram.

TABLE IV.—*Rheumatoid Arthritis. Alteration in Functional Capacity Per Class*

Class Before Treatment		Class After Treatment											
		I		II		II+		III−		III		IV	
		M	F	M	F	M	F	M	F	M	F	M	F
I	M	—											
	F												
II	M	1		5									
	F		7		9								
II+	M	3		15		1							
	F		11		18		4						
III−	M	3		23		5		1					
	F		15		48		25						
III	M	1		14		8		3		2			
	F		8		19		22		12		10		
IV	M			1		3				1			
	F				1		4		11		10		5
Total		8	41	58	95	17	55	4	23	3	20	—	5

in the ordinary way, so that the attempt was undertaken by means of simple scoring, before and after treatment of each particular group as a whole. For this purpose tables of assessment and treatment data already compiled were utilized. The six functional classes—I, II, II+, III−, III, and IV—were allocated the arbitrary values of 6 to 1 respectively; the scores of each group before and after treatment were obtained from the product of the class values and the numbers in the classes; an improvement factor was represented by the difference in the scores before and after treatment, and this could be expressed as a percentage improvement factor. The fact that a group showed improvement does not, of course, imply that every member of the group improved by the same amount, but it does allow some comparison to be made between unselected groups.

Analysis along these lines showed the greatest improvement where the disease had been present for less than one year, with a gradual decline as the duration increased, but a further marked rise in improvement in cases of over 15 years' duration (Fig. 2). This latter effect may be related to the possibility that the disease at this time tends to be burnt out and that pain, soft-tissue stiffness, and apathy may be the cause of poor functional capacity. On the other hand, all age groups showed fairly comparable improvement (Fig. 3). For the functional classes as a whole, previous gold therapy did not affect the responses.

Again, using the simple scoring method, we investigated certain features regarding the infusions. Where the average duration of the infusions was about 18 to 24 hours the

response appeared to be maximal, and there was not much evidence of further improvement when the time was increased. There did not seem to be any clear evidence of greater improvement the larger the total amounts of corticotrophin administered. Increasing the overall average concentration above 0.9 mg. per hour did not result in increased efficacy. Further, there was no real evidence that increasing the number of infusions beyond three produced any better results. So far as the scoring figures go, they tend to support our clinical impression that the maximum effect was

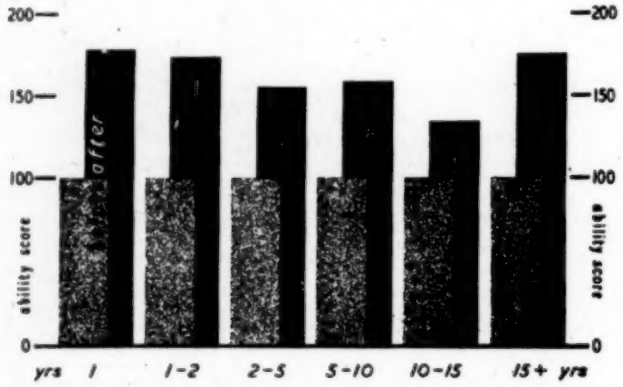

FIG. 2.—Improvement in functional capacity in relation to duration of disease.

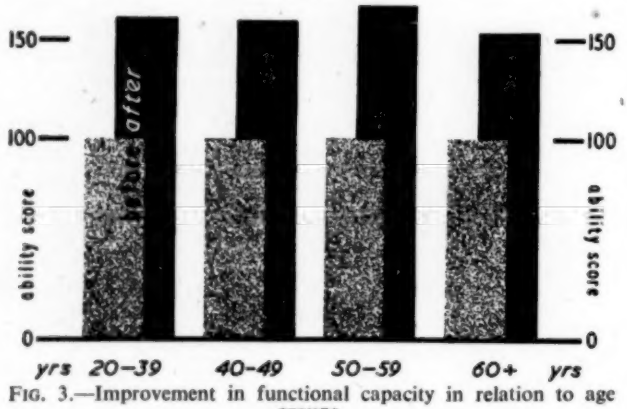

FIG. 3.—Improvement in functional capacity in relation to age groups.

practically obtained by one infusion of 18 to 24 hours' duration (containing 20 to 25 mg.). However, other factors, such as the poor condition of the muscles and pain, necessitated continuance of the infusion therapy while the appropriate remedial treatment proceeded. There was also some indication that the best interval between infusions was three to six days.

With regard to the other conditions treated, certain features are of interest. In two of the four cases of psoriatic arthropathy a dual remission was obtained, although the skin condition responded more slowly than the arthritic. In the other two cases the skin condition was resistant and the improvement in the arthritis was much less marked. Ankylosing spondylitis also showed some response. A remission occurred in two cases and considerable alleviation in seven others. An attempt was also made in osteoarthritis to apply the functional classification; considerable improvement was obtained in 25 patients, and 9 more were rendered symptom-free. Thus, in all, 34 out of 48 patients showed a favourable response to therapy. Of the 13 cases of the frozen-shoulder syndrome, six, all of whom were of the early acute type, showed complete or nearly complete relief. The response in the more chronic type was much less satisfactory.

Discussion

Apart from the initial classification of our material as shown in Table I, no further subdivisions of the rheumatoid arthritis group were attempted. As Sclater (1942–3) pointed out, rheumatoid arthritis can no longer be described as predominantly a disease of young females, and the condition in about half the cases may start in joints other than the fingers and wrists. Further, Cecil and Kammerer (1951) found that in the aged (over 60) the condition does not essentially differ from that in the younger age groups. Our experience is in agreement with these views.

In all age groups and in both sexes satisfactory improvement was often obtained. The response in the older age group was especially gratifying. In fact, there was not much alteration in response in relation to the different age groups. However, at this stage we have not been able to say why some patients failed to respond. This lack of response did not appear to be related to any obvious clinical feature such as age, onset, acuteness, rapidity of development, or any other easily recognizable clinical feature.

Our clinical observations in this series, when compared with our previous experience of intermittent intramuscular injection therapy for these conditions, have confirmed the initial reports of Mandel *et al.* (1951) and Renold *et al.* (1951) regarding the superiority of the infusion technique in respect of the rapid and often striking symptomatic relief produced. The later reports of Linquette *et al.* (1952) and Prosiegel *et al.* (1953) have also produced similar evidence.

The duration of the disease in the past has been regarded as of importance in the determination of response to the usual lines of treatment. Sclater (1942–3) noted the steady anatomical deterioration with increasing duration, while the reports of others—for example, Cecil and Archer (1926), Steinbrocker (1946), and Short and Bauer (1948)—have indicated the more easily obtained and more satisfactory response of early cases. On the contrary, we have found that while there is a gradual decline in improvement with increasing duration, yet in cases where the disease has existed for a long time—over fifteen years—considerable functional improvement has been obtained. As indicated above, this latter effect may be associated with a burnt-out state of the disease at this duration and major disability resulting from pain, soft-tissue stiffness, and apathy.

It has not been possible to make a comparison between our present results in this short-term in-patient study of rheumatoid arthritis and those presented in our previous long-term out-patient survey with gold salts (Hartfall and Garland, 1935, 1936; Hartfall *et al.*, 1937). In the latter investigation the present newly adopted mode of classification was not used, and since then there have been changes in the social status of hospital patients as well as a greater realization of the importance of intensive rehabilitation.

It seems that corticotrophin does little or nothing to alter the established anatomical status of rheumatoid arthritis, except perhaps in the earliest stages. Applied to early cases, it may in some circumstances arrest and apparently induce suppression of the disease, at any rate temporarily. In most cases it appears to be a valuable method of producing alleviation of the symptomatic disabilities, of procuring maximum co-operation from the patient by indicating potentialities for improvement still resident in the body, and of promoting the early and intensive initiation of a rehabilitation regime. Quite apart from its use in the early, moderate, and severe cases in good anatomical and physical condition, there is a place for it in the more advanced and even crippled cases. In the latter, the main purposes are to reduce pain and induce euphoria. It is thus a valuable means of obtaining in some cases a quick and sometimes a striking temporary suppression of symptoms which may allow increased mobility and other forms of maintenance treatment, including a more rapid and more thorough development of a physiotherapeutic regime.

As a means of initiating a rapid response in any acute or subacute exacerbation the method has been very useful. We have employed it as a preliminary to some other form of maintenance therapy such as a phenylbutazone or chrysotherapy regime.

A useful field of employment has been to cover orthopaedic procedures, including manipulation for the breaking down of adhesions and for the correction of deformity.

In conjunction with cortisone therapy its use has been threefold: as a preliminary to routine cortisone maintenance to bring the patient under control quickly, from time to time to gain additional symptomatic improvement during the cortisone therapy, and to re-stimulate the pituitary–adrenocortical mechanism in those who seem to be losing ground on a dose hitherto nearly adequate to control symptoms.

With regard to the other conditions treated, it may be mentioned that in the few cases of psoriatic arthropathy the uncertain skin and joint responses observed were similar to those reported by Boland (1950a) and Hench *et al.* (1950) with ordinary corticotrophin therapy.

In osteoarthritis there may be theoretical arguments against the successful employment of corticotrophin (usually lack of inflammatory changes). We have treated 48 cases of osteoarthritis, and it seems clear that improvement has resulted. It may be, of course, that this has occurred in cases in which there has been some local superadded severe painful (inflammatory) condition, perhaps with accompanying effusion. We have no doubt that in painful osteoarthritis consideration should be given to the use of corticotrophin even if only as a temporary symptomatic therapeutic expedient. Dale (1950), Bauer (1950), and Dale and Amil (1953) have all noted a definite improvement following ordinary corticotrophin therapy in this condition.

In ankylosing spondylitis the method may be extremely valuable, the drips being interspersed in the course of a more prolonged therapeutic and rehabilitation plan. Infusion therapy has also been used by us in conjunction with deep *x*-ray therapy. Boland (1950b), McEwen and Bunim (1950), and Hart (1952) have found ordinary corticotrophin to be a potent weapon for short-term treatment of acute painful episodes in spondylitis. West and Newns (1954), however, thought that prolonged adrenal stimulation was justified only in the most severe cases.

In the acute cases of the frozen-shoulder syndrome with severe pain, occasionally a striking and rapid improvement is achieved, permitting the earlier initiation of a physiotherapeutic regime and sometimes producing an early termination of what is often a lengthy rehabilitation. In the more chronic cases with severe fixation or tissue calcification the results are usually poor and disappointing, and even when used before and after manipulation the results have not been impressive. Stein *et al.* (1953) were impressed with the acceleration of recovery when intravenous corticotrophin or an intramuscular long-acting preparation was used after manipulation.

About the small group of miscellaneous conditions we do not propose to make any definite comments except to say that we have not been successful in the relief of pain and stiffness in Paget's disease, but have had beneficial results in fibrositis and psychogenic rheumatism. From our general experience in cases with poor peripheral circulation we feel this technique might be useful in cases of Raynaud's syndrome.

In conclusion, it may be emphasized that there can be no doubt regarding the enhancement of the therapeutic effect when corticotrophin is administered by intravenous infusion. Moreover, a response can apparently be obtained upon occasions when no benefit has previously resulted from ordinary intramuscular administration. Further, there is a great economy in the material used and the labour involved when the regular intramuscular injections are superseded by the spaced intravenous infusions. There has also, upon analysis of our results, been confirmation of our clinical impressions that the more prolonged effusions of 18 to 24 hours were of greater efficacy; that there was no indication for dosages per infusion greater than 20 to 25 mg. or concentrations greater than 1 mg. per hour; that in general there was nothing to be gained by many frequently repeated infusions, the maximal effect being gained by the first few infusions; and that three to six days was a satisfactory interval period between infusions.

Summary

The application of a technique for corticotrophin therapy in rheumatic conditions by spaced intravenous infusions has been described.

The procedure has been found safe, economical, and free from side-effects such as hypercorticism, sodium retention, or permanent disturbance of carbohydrate metabolism.

Observations are recorded on the effects of this therapy, in conjunction with routine general supportive, physical, and rehabilitation regimes, on 425 patients.

The results obtained in the different conditions treated are presented: rheumatoid arthritis, 329 patients (90 males and 239 females); psoriatic arthropathy, 4 females; ankylosing spondylitis, 13 patients (7 males and 6 females); osteoarthritis, 48 patients (4 males and 44 females).

In the rheumatoid arthritis group, improvement of some degree was obtained in 89% of cases, and maximum improvement to complete functional capacity in 15% of cases.

The indications for the employment of this therapy and its value as part of the programme for rehabilitation in rheumatic conditions have been briefly considered.

For the supplies of corticotrophin made available in this investigation we are indebted to the Joint Committee of the Medical Research Council and Nuffield Foundation on clinical trials of cortisone, A.C.T.H., and other therapeutic measures in chronic rheumatic diseases. We wish to thank Dr. C. W. Dixon for statistical advice and Mr. H. G. Lumby for preparing the figures.

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TREATMENT OF PERIARTHRITIS OF THE SHOULDER WITH HYDROCORTISONE

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Periarthritis of the shoulder, first described by Duplay (1872), of Paris, is a chronic inflammation of the various soft tissues that form the shoulder-joint. Codman (1909) described it as a process essentially involving the rotator-cuff system of the muscles and subacromial bursa that surround the shoulder-joint, but pointed out that it was an extremely difficult condition to treat. It was also a generally held view that the prognosis was excellent and that there was nearly always complete recovery within a year (Codman, 1934; Wilson, 1943); but Simmonds (1949) showed that, in a series of cases followed up for three years, only 30% had regained normal function, a further 30% had some weakness or loss of movement, and as many as 40% had both weakness of the joint and persistent pain.

Heat, mobilization exercises, the injection of local analgesics, manipulation, arthrotomy for section of the adhesions, and excision of the acromion or even arthrodesis have been recommended in the past, and practised, usually with relatively poor results (Steindler and Marxer, 1946).

Pathology

The condition begins as an acute non-specific inflammation following major or minor trauma, and, when untreated, progresses in severe cases to the condition of "frozen shoulder" (see Fig. 1).

The microscopical appearances have been well described by Neviaser (1945) and by Simmonds (1949), the latter showing that the earliest lesion is an area of abnormal focal necrosis in a degenerative tendon. This is typified by the picture of extreme vascularity and round-cell infiltration. If unchecked it progresses to a generalized chronic inflammatory reaction of the whole rotator-cuff mechanism and the capsule of the shoulder-joint. At this stage the shoulder is immobilized by painful protective spasm and shows every sign of an acute inflammation. With rest this will subside, and as fibrosis ensues the "frozen shoulder" results.

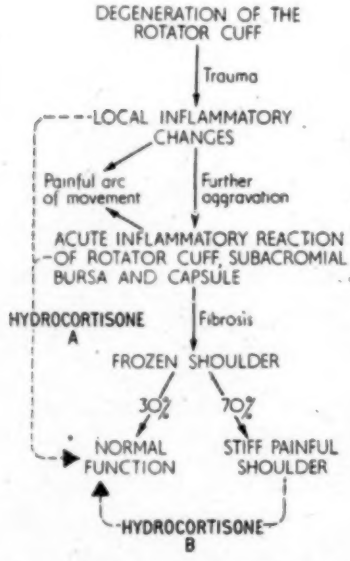

FIG. 1.—Diagram illustrating the pathology of periarthritis of the shoulder.

Theoretically such a pathological condition should respond to the effect of cortisone or hydrocortisone. The actions of the hormone are twofold: anti-inflammatory and fibrinolytic; the former action might well be expected to take effect in the earlier stages of the cycle (A in Fig. 1) when the inflammation is acute, and the latter action in the late stages (B in Fig. 1), where fibrosis is already progressing as in the typical "frozen shoulder."

The first reports, however, of the treatment of such lesions with the hormone showed widely varied results. Cyriax and Troisier (1953) stated that hydrocortisone was of no value in the treatment of "freezing arthritis," whereas Robecchi and Capra (1953) considered that their results indicated that it had a place in the treatment of such lesions.

Early experience in this hospital showed mixed results (Crisp and Kendall, 1955), but with the evolution of a new technique greater success has been attained.

Technique

It is clear from the pathology that any local inflammatory lesion of the cuff rapidly becomes generalized; thus it has been our policy not only to inject the point of maximum tenderness or maximum pain on resisted movement, but to introduce the hydrocortisone into several points around the shoulder-joint to ensure the greatest possible contact with all

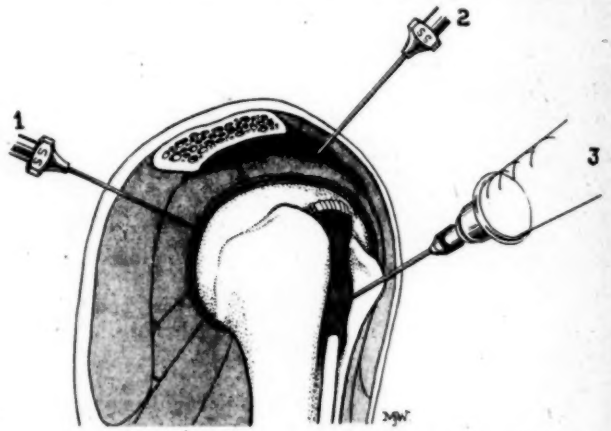

FIG. 2.—Showing injections of the shoulder-joint: (1) into the joint space, (2) into the subacromial bursa, and (3) into the region of the long head of the biceps.

layers of the rotator cuff and the capsule. The injections were therefore sited at three different points: anteriorly into the subacromial bursa; antero-laterally into the region of the long head of the biceps; and posteriorly into the joint capsule (see Fig. 2).

The injection itself comprised 50 mg. of hydrocortisone in a 2-ml. suspension, with the addition of 1,000 units of hyaluronidase to ensure maximum dispersion and contact. Also added to the injection was between 2 and 3 ml. of 2% procaine hydrochloride, which had the function of increasing the volume of the injection and which assisted the patient by temporarily relieving pain. Previous control experiments had already shown that procaine and hyaluronidase injected into the shoulder lesion gave little more than temporary relief; in fact, Simmonds (1949) attributes to it "all too frequently . . . a year or more of misery."

The acute cases received no other treatment except the advice to use the shoulder as normally as possible; the chronic "frozen shoulder" group were given vigorous actively assisted and manually resisted shoulder exercises regularly throughout the course of the injections, which were repeated at weekly intervals until recovery.

Results

For the purpose of analysing our results we have divided the cases treated into separate groups, the acute and the chronic. The former comprises all those in the earlier stages of activity, and includes such local conditions as supraspinatus and subscapularis tendinitis. The latter group refers to the long-standing cases in which fibrosis and

limitation of movements are the prime features and in which the symptoms of acute inflammation have subsided.

Of 50 acute cases treated (see Table), 36 obtained complete relief of symptoms from the injection of hydrocortisone alone within 7 to 14 days. Only three cases failed to improve at all.

Treatment of Periarthritis of the Shoulder with Hydrocortisone

	No. of Cases	Complete Recovery	Partial Improvement	No Change
Acute lesions ..	50	36	11	3
Chronic ,, ..	23	13	5	5

In the chronic group the results were not nearly so good, presumably as the inflammation had subsided and the fibrinolytic action was less powerful. Nevertheless 13 out of 23 cases progressed to a complete recovery with hydrocortisone injections and exercises over a period of four to six weeks.

Conclusions

In the treatment of the various acute and chronic soft-tissue lesions within and around the shoulder-joint hydrocortisone has led to a new method of approach to what was previously a most difficult therapeutic problem.

The majority of both local and generalized acute shoulder lesions showed a dramatic response to hydrocortisone injections into the various components of the rotator cuff.

Although we have had a lower percentage of cases with full relief of symptoms than Robecchi and Capra (1953), we nevertheless feel that the use of the hormone is indicated, at least for a trial period, in every acute case.

The results in the more chronic shoulder lesions, where fibrosis is a prominent feature, have not been so good. This would indeed be expected from consideration of the pathology. In association with routine physiotherapy, however, improvement of the condition has been obtained in a sufficiently high percentage of cases to warrant further trial of the method. Other forms of treatment are so notoriously unsuccessful in the experience of the majority of authors that we feel that hydrocortisone provides a marked advance in what Cyriax and Troisier call the "apparently endless search for effective treatment of 'freezing arthritis.'"

Summary

The pathology of periarthritis of the shoulder-joint and the theoretical effects of hydrocortisone in its various stages are discussed.

The technique of treatment by the injection of hydrocortisone, hyaluronidase, and procaine hydrochloride is described.

Of the acute cases treated by this method 72% progressed to complete recovery in 7 to 14 days and a further 22% were improved.

Of the "frozen shoulder" type of case 56% regained full function in four to six weeks, following hydrocortisone injections and shoulder exercises; 22% were improved.

We consider that the use of hydrocortisone is a notable advance in the treatment of soft-tissue shoulder lesions.

Our thanks are due to Miss M. Waldron, of Guy's Hospital Department of Illustration, for Figs. 1 and 2.

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LOCAL HYDROCORTISONE IN DE QUERVAIN'S DISEASE

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In 1895 Fritz de Quervain, a Swiss surgeon, described five cases of stenosing tenosynovitis at the radial styloid, the prominent symptom of which was pain in the region of the wrist-joint. Subsequent writers have observed that the pain may be referred up the arm as high as the elbow, or downwards to the dorsum of the thumb. The pain appears to be due to movements within the thickened and stenosed synovial sheath, containing the tendons of abductor pollicis longus and extensor pollicis brevis, as it passes under the extensor retinaculum of the wrist in the first dorsal compartment. The thickening of the sheath in some cases is so marked as to be easily visible, and in the majority is palpable. The condition is common, and often the cause of considerable disability to the housewife and worker. Analogous stenosis has been described in all the remaining five tunnels beneath the extensor retinaculum, in most of the sheaths of the flexor tendons, and in the tibialis anterior and peroneal tendons.

Most authorities agree that stenosing tenosynovitis is often due to mechanical factors or trauma, and that histologically the signs of inflammation in the sheaths or tendons are rare.

Since the original description many methods of treatment have been suggested, operation holding pride of place and having been suggested by de Quervain himself. Surgical treatment entails incision of the tendon sheath, or, if this is greatly thickened, excision of a portion. Other more conservative methods of treatment still in use are the inunction of various substances, immobilization of the wrist and thumb in a plaster or plastic splint (Thompson *et al.*, 1951), and the application of physiotherapeutic measures. Injection of the sheath with fluids and local analgesics had also been tried. Although strongly advocated by Ellis (1951), inunction rarely seems to give a lasting cure, and the same applies to physiotherapy. Immobilization often relieves the pain, only to be followed by a recurrence of the symptoms when activity is resumed. According to Wiles (1949) it is doubtful whether many cases recover without operation.

The recent reports of the value of local hydrocortisone in "tennis elbow" and soft-tissue lesions seemed to merit the controlled trial of its use in the present condition. Howard *et al.* (1953) describe its use in three cases of de Quervain's disease and 11 cases of tenosynovitis, and Cyriax and Troisier (1953) report a favourable result in one case of tenosynovitis of flexor carpi radialis following two injections of hydrocortisone. In view of these findings it was felt to be justifiable to treat a number of patients by this method and compare the results with cases treated by injection of local analgesic alone.

Material

The series consists of 20 consecutive cases of de Quervain's disease referred to the Department of Physical Medicine and Rheumatism of the Middlesex Hospital.

Three criteria were held as essential before such a diagnosis was made. These were: (1) Tenderness on palpating the tendons of abductor pollicis longus and extensor pollicis brevis as they lie along the lower outer border of the radial styloid. (2) Pain, radiating up the forearm and down the thumb, on active abduction and extension of the thumb and aggravated by the resisted movement. Passive movements were invariably painless. (3) Pain on flexing the thumb into the palm and closing the remaining fingers around it. This is further aggravated by forced ulnar deviation of the hand at the wrist (Finkelstein's (1930) test). All cases in the present series conformed to these criteria.

In none of the 20 cases reviewed was there any obvious predisposing factor, although in three the symptoms were aggravated by occupational factors (tailor's cutter, sempstress, and poster artist) involving frequent repetitive movements of the thumb. Sixteen of the cases (80%) occurred in females. The right and left hands were affected approximately equally, although all the patients were right-handed. The age incidence varied from 18 to 74 years, there being rather more patients in the younger than in the older age groups. The symptoms had been present for periods varying from four weeks to three years (average six months).

It is interesting to note that crepitus was not elicited in any of these cases in the region of the tendon sheath, either on palpation or on active or passive movements. The thickening of the tendon sheath was visible only as a tumour in one patient, in whom it was very marked. This completely disappeared over a period of five weeks following one hydrocortisone injection with complete return of function, the patient returning to her work as a sempstress entailing continuous use of the thumb.

The patients were divided into two groups: (1) Group A, receiving 1 ml. (25 mg.) of a suspension of hydrocortisone acetate into the tendon sheath following infiltration with 1 ml. of 2% procaine hydrochloride; and (2) Group B, injected with 1 ml. of 2% procaine hydrochloride alone and observed over the ensuing period—when relief was no longer experienced these patients were treated in the same manner as Group A. There are therefore 20 cases in Group A and 10 in Group B, the latter acting as the control series.

Method

The method adopted in all these injections, whether of procaine or hydrocortisone acetate, was standardized as follows. With the patient seated facing the operator, the point of the needle was introduced through the skin about 1 cm. distal to the tip of the radial styloid in the line of the tendon of abductor pollicis longus. An intradermal bleb of local analgesic was raised, and through this the needle was passed, it being directed upwards over the radial styloid so as to enter the common sheath of the tendons concerned. The contents of the syringe were then discharged, with the production of a longitudinal "sausage-shaped" tumour, which was clearly defined and taken as evidence that the injected fluid had actually entered the tendon sheath. In those cases that received both procaine and hydrocortisone injections at the same attendance the procaine was given first, being immediately followed by the hydrocortisone, a second needle and syringe being used.

It was found easier to insinuate the needle into the tendon sheath if the patient adopted a position of moderate ulnar deviation. In all cases the skin was first swabbed with surgical spirit and a small dressing applied after the injection. Patients were instructed to use their wrists normally and informed that no special precautions were necessary.

Results

The patients treated with procaine and hydrocortisone injections (Group A) can be further subdivided into those treated in this manner initially and those treated following procaine injections alone. In seven out of the first ten patients there was complete relief of symptoms for one hundred days or more following the combined injection. For the purposes of the report this was regarded as a clinical cure. The three remaining patients relapsed at intervals after injection, but were relieved by a further injection. One of these, because of his regular relapses, has been referred for surgery, and it seems that the other two may have to be referred in a similar manner.

The patients in Group B showed relief of symptoms varying from one hour to one to two days, gradually waning, so that after five days there was a complete relapse to the original state in all cases. The average duration of the relief was about two days. Although the pain disappeared in all cases immediately after the injection it was often accompanied by a dead feeling of the wrist, which was not experienced when hydrocortisone was used. These patients were subsequently added to Group A.

Of these latter patients when treated with hydrocortisone and procaine injections, one relapsed during the eighth week and is now symptom-free following a second injection. The remaining nine patients have no pain at periods varying from five and a half to fifteen weeks after the injection.

During the treatment of these cases no serious complications were encountered. In two cases there was a complaint of dull aching pain in the wrist following hydrocortisone injection, but this subsided in a few days without treatment. One case developed a superficial thrombophlebitis, which responded to strapping for ten days.

Discussion

The recent use of hydrocortisone in other soft-tissue lesions prompted this survey of its use in de Quervain's disease. The results of this small series are encouraging and seem to merit further trial of the method. It appears that hydrocortisone has a place in the treatment of this troublesome condition and may be used as an alternative to surgery in many cases. With supplies of hydrocortisone becoming more plentiful this simple method of treatment may become more widespread, thereby making it unnecessary for most patients to undergo operation. In those cases in this series in which treatment has succeeded, full function has been restored and all pain relieved almost immediately after the injection, although in one or two there was a time interval of several days before full relief was experienced. It is difficult to retain patients for long periods of observation when complete relief of symptoms has ensued. Nevertheless, although relief for one hundred days has been regarded as a cure for the purpose of this series, it is known that several patients have had no relapse for periods approaching six months. It is suggested that cases of de Quervain's disease should first be treated by local hydrocortisone injection, and that those who relapse within a short period be referred for operation in the usual way. It will also prove valuable in patients not wishing to undergo surgery and has the great advantage of leaving no scar. If further experience substantiates these findings it would appear to be the treatment of choice in de Quervain's disease and in tenosynovitis occurring at other sites.

Summary

De Quervain's disease is described and various methods of treatment are reviewed. Attention is drawn to the fact that analogous stenosis occurs in many other sites.

Twenty cases have been treated with local injection of 1 ml. (25 mg.) of a suspension of hydrocortisone acetate and 1 ml. of 2% procaine hydrochloride solution. Ten controls were treated with an injection of 1 ml. of 2% procaine alone.

The figures show an advantage in favour of local injection of hydrocortisone, 70% of the patients having remained free of symptoms for periods exceeding three months following one injection.

The results of this small series are encouraging, and seem to merit the further trial of hydrocortisone in de Quervain's disease and in tenosynovitis occurring at other sites.

I wish to thank Dr. A. C. Boyle for permission to quote these cases and for his interest and many helpful criticisms at all stages of the survey; Mr. Philip Wiles and Mr. P. H. Newman for kindly referring cases; and Roussel Laboratories for generously supplying all the hydrocortisone used.

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EFFECTS OF MODIFIED E.C.T. ON THE ELECTROCARDIOGRAM

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There have been several investigations into electrocardiographic changes during electric convulsion therapy (E.C.T.). Most of them were carried out before the use of muscle relaxants, and consequently the records could be taken only after the end of the convulsion. The purpose of this paper is to record our findings in patients whose convulsions were attenuated by muscle relaxants to such an extent that the electrocardiogram (E.C.G.) could be recorded during the convulsion, thereby providing further information regarding the safety of the procedure.

Method

Relaxation was achieved by the use of suxamethonium chloride, but, as the slightest movement of the limbs during stimulation interfered with the tracings and made their interpretation difficult or even impossible, doses far in excess of those normally used for routine treatment had to be employed. Four milligrams of suxamethonium per stone (0.6 mg. per kg.) of body weight gives adequate attenuation of the fit for routine treatments in the majority of patients, but for our purpose it was necessary to administer up to 10 mg./stone (1.6 mg. per kg.) to obtain the degree of relaxation required.

Every patient was fasted for at least four hours and was given atropine, 1/100 gr. (0.65 mg.) hypodermically half an hour before treatment.

After explaining to the patient the nature of the investigation, a resting E.C.G. was taken. (At the beginning of the investigation the three standard leads were recorded on a three-channel Elmqvist; later, a direct-writing Cambridge electrite cardiograph was used and Lead II recorded.) A "sleep dose" of intravenous thiopentone was administered slowly, 0.25 g. seldom being exceeded. It was followed immediately by a large dose of suxamethonium from a different syringe, but through the same needle. As soon as apnoea developed the lungs were inflated with oxygen through a face-mask and bag. A second recording was then taken to assess the effect of the relaxant. As the changes noted were slight and were regarded as of no significance, the relaxant was discontinued after 74 records had been taken. The electric convulsion shock was given with a Plexicon electroplexy unit, while a further tracing was recorded. Except for a short period during the application of the electrodes and the insertion of the Multitone mouth gag, as described by Back (1952), which at the same time permits the maintenance of a good air-way, the lungs were inflated with oxygen from the beginning of the apnoea until adequate respirations returned.

Material

We recorded 214 E.C.G.s from 105 patients who received E.C.T., 57 of the patients being investigated on more than one occasion. In 14 records, in spite of the use of the relaxant, there was interference gross enough to make interpretation difficult or even impossible; this occurred mainly in the early cases, before it was definitely known how much suxamethonium was needed to ensure complete inertia. In 50 records there was slight interference, which did not seriously affect the reading of the tracing, whilst 150 were good.

There were 37 males and 68 females in the series, and their ages ranged from 16 to 78. Just over 50% of the female patients were in the age group 30–50, and almost twice as many were under 50 as over 50, whereas amongst the males the cases were almost equally divided between those under 50 and those over 50, with the majority also about equally divided between the 30–50 and 50–70 age groups (see Table).

Age Incidence

	Under 30	30–50	51–70	Over 70	Total
Male	4	15	16	2	37
Female ..	10	35	19	4	68
Total ..	14	50	35	6	105

Most of these patients had normal hearts, but in 10 a cardiac abnormality had been recognized clinically or was suspected from the appearance of the control E.C.G. Two men, aged 57 and 77, gave a past history of cardiac infarction and had abnormal E.C.G.s, one showing a right bundle-branch block pattern. In a woman aged 61 there was also a right bundle-branch block picture but no history of cardiac pain and no other electrocardiographic abnormality. In three women, aged 50, 55, and 66, the control E.C.G. suggested old posterior cardiac infarction. Two women, aged 34 and 58, had clinical evidence of mitral stenosis, although not of a severe degree. In a man aged 60 there was evidence of left ventricular hypertrophy, and complete heart block was found in the control record of a woman aged 31.

Results

Effect of Suxamethonium

In the first 74 records the effect of the suxamethonium was studied. The rate became faster in 41, slower in 13, and remained unchanged in 20; in no case was the change in rate marked. There was slight depression of the ST segment or flattening of the T wave in 5 cases, possibly due to temporary inadequate oxygenation immediately following diaphragmatic paralysis. There were no premature beats and no significant conduction changes.

Effect of the Shock

Rate.—In the control records the pulse rate was under 100 in 48% and under 130 in 87%, although a sinus tachycardia of 160 was encountered in 4 cases and of 170 in one case. A marked tachycardia developed within a few seconds of the shock being given. This usually lasted about 30 to 45 seconds, and in 65% of the cases the rate was over 130. In 37% it was between 140 and 160 and in 10% it was over 160, the most rapid rate recorded being 180. In nearly all instances the rate had returned to pre-convulsion figures within two minutes. In a few cases the sinus tachycardia was preceded by a sinus bradycardia lasting two to three

seconds. In nine cases a marked sinus bradycardia occurred shortly after the convulsive stage. In 17 cases there was no appreciable change in rate, and in several of these there appeared to be no convulsion at all—that is to say, the electrical stimulus had produced a stun or sub-convulsion.

Arrhythmias.—In 7 cases premature beats were present in the control, five being ventricular and two auricular. Amongst the 200 records which were clear enough for analysis, arrhythmias were encountered in 79 (39.5%), all being due to premature beats, except for one case of nodal rhythm. In 55 (27.5%) the arrhythmias were ventricular in origin, in 22 (11%) auricular, and in one case nodal. The ventricular premature beats were often multifocal and occurred singly, in groups of three or four, or at every alternate beat, coupling resulting in 19 cases (9.5%). Both auricular and ventricular premature beats were found in the same records in two cases. In a number of cases unusual waves occurred. At first sight they resembled those of a ventricular tachycardia occurring regularly at 150 a minute, but they were due to muscle contractions in patients who had had doses of suxamethonium insufficient to prevent muscular activity. In others in which the attenuation was greater, but still insufficient, a picture resembling an auricular tachycardia was produced. None of these abnormal waves was seen when the convulsion was completely attenuated or when the convulsive stage had passed. They occurred between 5 and 30 seconds after the shock was given.

Disturbance of Conduction.—In the one case of complete heart block in the control record frequent ventricular premature beats and coupling developed during the convulsive stage. In only one case was the P–R interval abnormally lengthened, and then only temporarily, increasing from 0.16 sec. in the control to 0.24 sec. for four complexes. This occurred after a stun in a woman of 28; but on three subsequent occasions, shortly afterwards, when the shock was repeated in the same patient with a successfully modified convulsion, there was no disturbance of the P–R interval. In no case was prolongation of the QRS complex caused by the shock. In the two patients in whom there was a prolonged QRS complex in the control record it was not altered during the convulsion.

ST Depression.—Slight ST depression was present in the control records in 21 patients, in 16 of whom it was associated with tachycardia, while in 2 cases the presence of pathological Q waves suggested old infarction. Some degree of depression of the ST segment was found in 63 E.C.G.s recorded in 37 patients after the shock was given. In 42 records from 25 patients it was considered to be due to the Ta wave, secondary to tachycardia. In the other 21 from 12 patients the characteristics of the ST depression were such that it was judged to be ischaemic in origin. The age of these 12 patients ranged from 42 to 70, and in two the possibility of posterior cardiac infarction had been noted in the control curves.

T Waves.—As was to be expected, slight lowering of the T wave was often encountered with the development of tachycardia, but in 7 cases the waves were flattened, and in the case of a woman aged 40 they were inverted in two records.

U Waves.—In 91 records U waves became visible during the period of slowing following the cessation of the convulsive stage. They usually appeared when the rate had fallen below 100, and were often prominent even when they had been small or absent in the control. On no occasion was inversion of the U wave found.

Discussion

Anaesthesia and Relaxation

All the established muscle relaxants have been used to mitigate the fits which are produced during E.C.T.; but there are few anaesthetists who do not recognize the great contribution which has been made by the introduction of the ultra-short-acting group of relaxants, particularly when the frail and elderly patient is being treated. By the use of these drugs complete relaxation can be ensured, if necessary throughout the whole period of stimulation, and yet rapid recovery can be expected. Because of this degree of relaxation we have obtained electrocardiographic tracings, free from interference, covering the period of treatment from beginning to end.

One of two relaxant drugs is now commonly employed; either suxamethonium chloride ("scoline," "anectine," succinylcholine chloride) or suxethonium bromide ("brevidil E"). Suxethonium has the advantage of a slightly shorter action (Wolfers, 1953), but as the degree of relaxation it produces is less reliable than that produced by suxamethonium, we chose to use suxamethonium throughout this investigation.

Suxamethonium appears to be a safe relaxant for E.C.T. provided adequate oxygenation is maintained throughout its short period of action. Adderley and Hamilton (1953) stated that some rise in blood pressure invariably occurred after a single dose of the drug, but considered this to be of little importance. Calvert and Morgan (1954), in a study of 57 patients during 200 consecutive convulsions, were unable to find any rise in blood pressure after administering the drug, and they thought that any rise that does occur is due to carbon dioxide accumulation and not to a direct pressor action of the drug. Using suxamethonium as a continuous drip, Green (1953) found that in most patients no rise in blood pressure occurs until at least 500 mg. of the drug has been administered, provided adequate ventilation is maintained.

Attempts have been made to use this drug alone to modify the convulsion, but the painful contractions which precede the relaxation and the unpleasant sensation of progressive paralysis make the procedure too unpleasant for the patient, as retrograde amnesia following the shock is never sufficient to cover this period. The relaxant drug is therefore always preceded by thiopentone. It is not sufficient to mix the two drugs together, as then the suxamethonium begins to take effect before unconsciousness occurs. The thiopentone is given slowly and in minimal doses, particularly in the elderly, so as to avoid undue lowering of the blood pressure.

In spite of the large doses of relaxant used, no very prolonged period of apnoea was recorded, 12 minutes being the longest.

Cardiovascular Effects

E.C.T. in the treatment of psychiatric patients has been practised for 15 years, and from the first it was felt that it might prove a severe strain on the cardiovascular system (Myerson, 1942). In spite of the frequent use of this form of treatment, however, fatalities involving the heart have only rarely been recorded. Ebaugh, Barnacle, and Neuburger (1943) report the death of a 57-year-old man from coronary thrombosis an hour and a half after the convulsion; he had already had twelve treatments, and, although a previous E.C.G. had been regarded as normal, extensive coronary disease and a recent thrombosis were found at necropsy. Kauntze and Parsons-Smith (1948), in 63 electric convulsions on 51 patients, found no evidence of any serious cardiovascular effects, but thought that coronary disease was a strong contraindication. Plice and Pfister (1950) believed that certain electrocardiographic abnormalities were caused by psychiatric disturbances, and described improvement in ST segments and T wave changes following E.C.T. Magendantz and Shortsleeve (1951) found that in many cases ST depression and T wave changes were due to anxiety and disappeared after rest and reassurance.

In our series ST and T wave changes were rarely present in the control records except in association with tachycardia, and even then they were slight. In the convulsive stage a marked auricular T wave associated with tachycardia occurred in 37 records (18.5%), but 21 records (10.5%) in 12 patients showed temporary ST depression which, adopting the criteria accepted by Wood *et al.* (1950), we regarded as ischaemic. Such a change can be due to anoxia from inadequate ventilation, but every effort was made to maintain adequate oxygenation, and in the six patients who had

more than one treatment the change was usually consistent. Furthermore, the ages of the 12 patients ranged from 42 to 70 years, with an average of 53; and, in two, changes suggesting coronary disease had been present in the control records. It was therefore concluded that the changes might possibly indicate latent coronary artery disease. It is, however, noteworthy that no ischaemic ST changes developed in the two patients who gave a history of cardiac infarction.

Lowering of the T wave was generally encountered only with considerable tachycardia, but an ischaemic cause was suggested by the inversion of T in Lead I in a woman of 40 in whom the control showed slight ST depression and a diphasic T in Leads I and II, for in this case the rate rose to no more than 120 a minute.

The frequency of U waves, which are thought to represent a process of repolarization of the interventricular septum (Zuckermann and Cabrera, 1947; Goldberger, 1953), is not considered to be of pathological significance, for they were upright in all cases; but it is interesting to note that they often became visible or accentuated in the stage of recovery following the convulsion. That they cannot be seen until the rate slows to less than 100 is of course due to the shortness of the T–P interval while tachycardia is present. Their increased prominence in many cases soon after the convulsion suggests a temporary change in the relative intraventricular pressures, for it has been shown that the U wave is influenced by changes which unilaterally alter the pressure on the septum (Zuckermann and Cabrera, 1947).

Anoxia was regarded by Kauntze and Parsons-Smith (1948) as the possible cause of the slight auriculoventricular conduction delay noted in half their cases and the intraventricular delay which occurred in 4%. In our series the P–R interval was abnormally prolonged in only one instance, and then after a sub-convulsion, and on no occasion did intraventricular delay result. The difference in these results can probably be accounted for by the greater ease with which we were able to inflate the lungs of our patients with oxygen during the convulsive stage.

Tachycardia was the principal effect of shock therapy, and this was always sinus in origin. In a few cases it was preceded by a sinus bradycardia for a few seconds, and in a few others bradycardia followed the convulsive stage; this was considered to be a vagal effect.

The absence of any change in rate was thought to be helpful in recognizing stuns, for their recognition is, of course, made more difficult by the use of large doses of muscle relaxants. In obvious stuns there is no change in rate, while only in a few cases with a definite convulsion was there no such disturbance.

The frequency of ectopic beats (39.5%) in our series is in contrast to that of Kauntze and Parsons-Smith, in which they occurred in only 8%. This is probably because in their series E.C.G.s could be taken only after the convulsive stage, during which the majority of the ectopic beats take place. Phillips (1954) has reported frequent ventricular extrasystoles following the administration of suxamethonium in the conscious patient, but only rarely when the relaxant was preceded by a sleep dose of a barbiturate. No premature beats were found after suxamethonium in our series of control records.

When two or more convulsions were studied in the same patient there was a relatively constant effect with regard to the presence and type of rhythm abnormality as well as to the degree of tachycardia which resulted. The rhythm changes, although frequent, were not marked, and in most cases were of short duration.

Conclusions

It seems probable that E.C.T. results in much less strain on the cardiovascular system than was originally anticipated. As in the majority of other recorded series, our cases have for the most part shown no evidence of any cardiac abnormality. The few that did show clinical or electrocardiographic evidence of such abnormality suffered no ill effects from the convulsion. Nevertheless, if frequent premature beats can occur so readily in normal hearts, more serious arrhythmias which are potentially harmful might occur in diseased hearts. It is therefore suggested that quinidine or procainamide ("pronestyl") may prove of prophylactic value in such cases, and one of these should be readily available for intravenous injection should a serious arrhythmia occur. Severe coronary artery disease, and in particular recent infarction, and evidence of any considerable degree of heart failure should still be regarded as contraindications to the use of E.C.T. Should treatment be considered essential on psychiatric grounds, however, it is unlikely that there would be any serious outcome, provided the precautions were taken of using a short-acting muscle relaxant, of ensuring adequate oxygenation, and of preventing the development of serious arrhythmias by means of procainamide.

Summary

A series of 105 patients were submitted to 214 electric convulsions which had been modified by the intravenous injection of ultra-short-acting muscle relaxants. Electrocardiograms were taken before, during, and after the convulsive stage.

In 10 cases with clinical or electrocardiographic evidence of heart disease, no serious cardiovascular disturbance occurred.

A marked degree of sinus tachycardia was usual. Nodal rhythm developed in one case and premature beats were recorded in 39% of the cases.

In view of the frequency of premature beats, it is suggested that quinidine or procainamide may be used prophylactically in cases in which the onset of gross arrhythmia is expected or feared.

We are very much indebted to Dr. Desmond Curran for stimulating this investigation. We wish to thank the medical and nursing staffs of the Psychiatric Departments of St. George's Hospital and the Atkinson Morley Hospital for their kind co-operation, and Drs. N. C. B. Trapps, D. J. Coleman, and B. L. Day for administering some of the anaesthetics. We should especially like to acknowledge the great help given by Miss Bromley and Miss Hurst, who recorded all the electrocardiograms.

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Dr. J. A. MACFARLANE, dean of the Faculty of Medicine at the University of Toronto, has some remarks to make in his report on the 1953–4 session about the teaching problems raised by new trends in methods of investigation and treatment. "This school," he writes, "has tried to hold an even balance between the constantly changing and more complicated methods of laboratory investigation and the system of bedside teaching and theatre clinics, with emphasis on the careful taking of history and painstaking physical examination. There are so many human ills that cannot be measured by any laboratory calculation. The student of medicine has much to gain from sound clinicians who still practise the art of medicine with a full knowledge that the techniques of university laboratories and their experts are immediately available when they are indicated."

PHYSIQUE AND THE GRAMMAR SCHOOL ENTRANCE EXAMINATION

BY

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To obtain standards for somatotyping children by physical anthropometry at the age of 11, 371 boys and 421 girls were measured by one of us (C. K. W.) as an additional part of the routine medical examination in the City of Oxford schools during the period January, 1953, to March, 1954. Following the discovery of significant relationships between physique and final honours class results among Oxford undergraduates (Parnell, 1954a), it was decided to compare children's physique with their marks in the grammar school entrance examination. This report covers our findings: it reveals those somatotypes who are most often successful in gaining grammar school places, showing a trend towards more frequent selection of less-muscular children; it also shows that significant relationships exist between physique and performance on intelligence tests, while significant physical trends also appear in the proportion of children with better than average achievement in English and arithmetic.

Somatotyping Children

The children's physiques were classified according to Sheldon and Tucker's (1940) somatotype method, with two important differences. First, since it was impossible to photograph the children, the estimates were based on physical measurements alone, whereas Sheldon uses mainly photoscopic methods. Secondly, since he has not yet published photographic standards for children, it seemed dangerous to adopt his terminology; therefore, while keeping to a classification with three components each on a scale of half points from 1 to 7, the components themselves are renamed. The first component, endomorphy, was called Fat (F), the second, mesomorphy, indicating bone and muscle development, was termed Muscularity (M), and Linearity (L), was substituted for the third component, ectomorphy.

The somatotype estimates can be plotted on Sheldon's (1954) chart with its centre 444 and extremes of 711, 171, and 117. The sectors have been named according to the primary and secondary dominance of the types falling within these sectors by capital and small type respectively. Thus an Mf child would be one who was predominantly muscular, but also fat (cf. endomorphic mesomorph). Occasionally the estimates could not be plotted directly on Sheldon's chart. In these cases, while retaining relative dominance between the components, each component was reduced or increased by one-half—for example, 336 plotted as 2½2½5½, 3½33½ as 43½4.

To estimate children's somatotypes a "deviation chart" was drawn up similar in design to that employed when typing undergraduates by physical anthropometry (Parnell, 1953, 1954b). The first step was to calculate means and standard deviations of all the measurements. Next the results for boys and girls were combined on the empirical grounds that the differences between them were, except in the case of the fat measurements, too small to make separate scales practicable. The central column of the deviation chart (see Fig. 1) contains the mean value of each measurement. Values of these measurements at half standard deviation intervals are arranged on each side of the centre. There are six columns on each side, so that the outside columns correspond to measurements three standard deviations above and below the mean. In the case of fat measurements, logarithmic scales are employed to relieve skewness in the distribution.

A "profile" was drawn for each child by ringing the appropriate value for every measurement. This gave a general impression of the physique (see Figs. 1–4). Numerical estimates for each component were obtained as follows:

Fat (Endomorphy)

The total of the three fat measurements taken was plotted on a logarithmic scale (based on the mean total fat), and "F" estimates were given according to Table I.

Muscularity (Mesomorphy)

I. First Estimate.—For children of average height a "bone and muscle" point was found corresponding to the average standard score of the humerus, femur, and muscle girth measurements. A rating was given according to the number of columns (half-units) the "B.M." point lay from the central column of mean values, which was rated 4. Children *not of average height* presented a problem, because bone and muscle measurements are determined by size as well as by body shape. This was dealt with by calculating somatotype 444 bone and muscle measurements for each half-unit of height assuming a linear relation between height and bone muscle measurements—that is, by multiplying the mean bone and muscle measurements by $\frac{\text{actual height}}{\text{average height}}$. From these 444 somatotype measurements a corresponding 444 "B.M." point was found for each height. Fig. 5 shows a section of the deviation chart with lines linking the 444 somatotype measurements with each unit of height. The muscularity rating was allotted according to the number of columns an individual's "B.M." point lay from the 444 point for his height. Thus a child of height 61.5 in. and with humerus 6.7 cm., femur 9.1 cm., biceps 20.5 cm., and calf 30.2 cm. would have a "B.M." point at the position of the cross (×), which is one column, or a half standard deviation, from the 444 point (marked 4); he would receive a provisional rating of 4 minus ½, or 3½, in muscularity.

II. Correction for Fat.—There is the further complication that measurements of bone and muscle girth are affected by the amount of fat present, bone slightly but girth rather more; unless allowance is made for this, fat people would be overestimated in muscularity, thin people underestimated. Corrections were made for fat according to the lower part of Table I. This was based on the assumption that there is a linear relation between the amount of fat and its effect on bone and muscle measurements. Since the F scale was based on logarithmic increases of fat, corrections for fat to the muscularity scale increase in the same way and have been rounded off for convenience.

TABLE I.—*For Estimating F Rating, and Appropriate Correction for Fat to Estimate M for Muscularity*

Total fat (mm.): Midpoint / Limits	12 <12	14 13–15	17 16–18	20 19–22	24 23–26	29 27–31	35 32–38	42 39–46	50 47–55	60 56–66	72 67–79	87 80–95	104 96+
F rating	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
Correction to M rating	+½	+½	+½	+½	0	0	−½	−½	−1	−1½	−2	−2½	−3

Linearity (Ectomorphy)

The ponderal index (height over the cube root of weight) was used as the basis for rating linearity as shown in Table II. The somatotype distributions of boys and girls may be compared in Figs. 6 and 7.

TABLE II.—*For Estimating Linearity (L) From the Ponderal Index*

Height ÷ ∛Weight	—	12·1	12·4	12·7	13·0	13·2	13·4	13·6	13·8	14·0	14·2	14·4	14·6
	12·0	12·3	12·6	12·9	13·1	13·3	13·5	13·7	13·9	14·1	14·3	14·5	÷
Linearity	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7

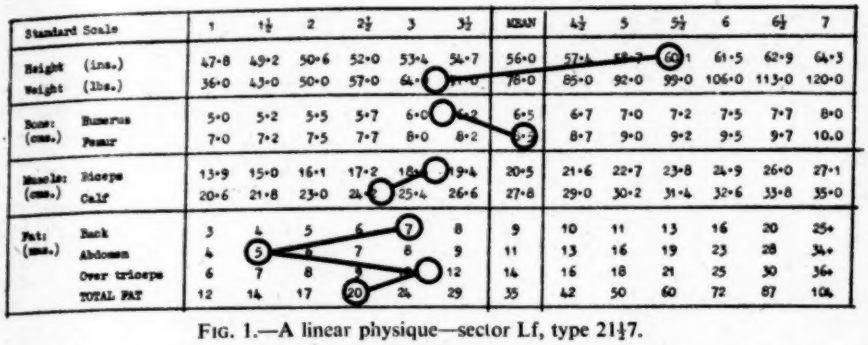

FIG. 1.—A linear physique—sector Lf, type 21½7.

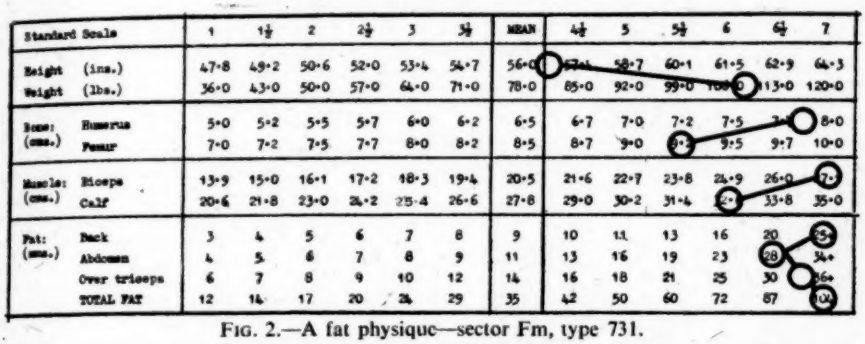

FIG. 2.—A fat physique—sector Fm, type 731.

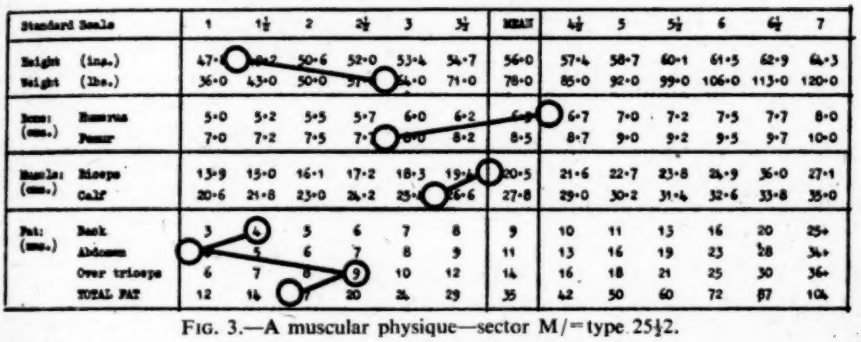

FIG. 3.—A muscular physique—sector M/=type 25½2.

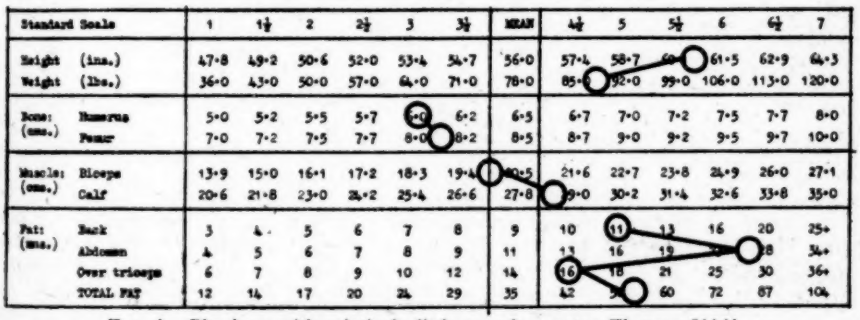

FIG. 4.—Physique with relatively little muscle—sector Fl, type 51½4½.

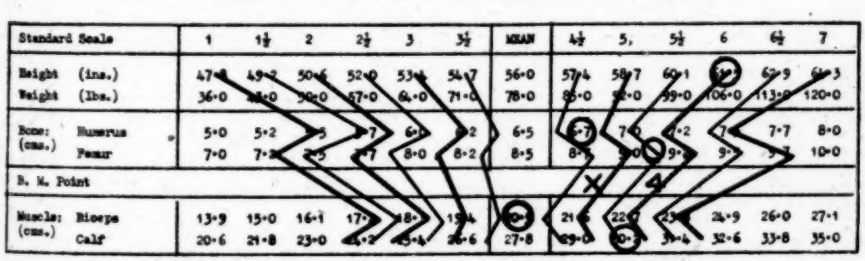

FIG. 5.—Somatotype 444 measurements according to height.

For the purpose of the present analysis, sector Mf includes types 343, 252, etc.; Ml includes 344, 244, etc.; in other words, viewed from the central 444, each sector includes its right-hand margin.

Findings

The "11-plus" examination consisted in 1953 of three papers—an intelligence test, English, and arithmetic—to which the Peel test of practical ability was added in 1954.

Complete results were not available for two groups of children—those who scored less than 70 in the intelligence test and those absent from one or more papers. The former were automatically excluded by their low mark from taking any further papers, and therefore cannot figure in this sample; their physique distribution will, however, be analysed in the intelligence test section of the boys' part, since all these very low scorers were boys. Those who were absent will also be removed from the sample after discussion of their somatotype distribution.

Absence

Five per cent. of the girls and 6.2% of the boys were absent at one or more papers. Physique seemed to play a part here; among the girls with a fat rating of 6 or more (the body-build associated with an easy-going comfort-loving temperament), 16.2% were absent as against 3.9% in the remainder of the sample $\left(\frac{\text{Difference}}{\text{S.E. Diff.}} = 2.0\right)$.*

Analysis of the boy absentees yielded a similar result, but with a different emphasis: this time it was the linear boys (in sectors Lm, Lf, and Fl) who were noticeably present, with only 1.9% absent for one or more papers, as against 7.9% in the other sectors $\left(\frac{\text{Difference}}{\text{S.E. Diff.}} = 2.8\right)$.

Girls' Results

The children's results were analysed in terms of those scoring above and below the mean for each subject. In the girls' results the most outstanding feature was

*If two proportions differ by more than twice the standard error of the difference (S.E. Diff.), the difference is said to be "significant"—that is, such a difference would arise by chance, roughly, once in 20 times.

that the less muscular sectors (in particular Lf), consistently in all the tests, contained a greater proportion of girls scoring above the mean than the rest. The muscular-linear girls (Lm and Ml) varied in performance, while the muscular-fat ones (Mf and Fm) always had a lower percentage of high scorers than the whole sample. The results are given in detail in Table III.

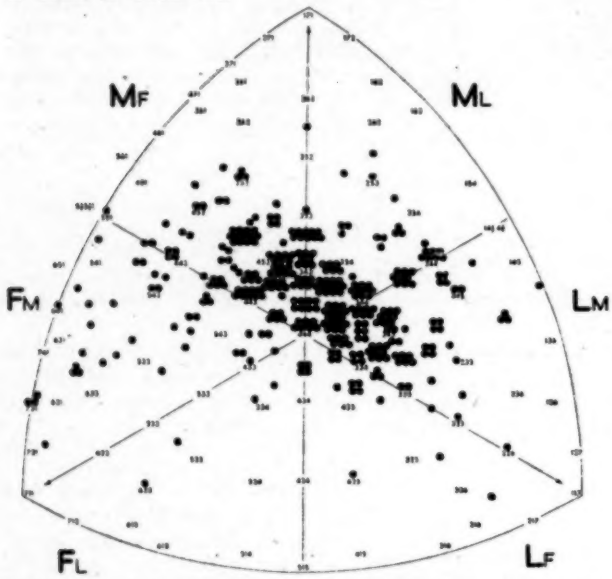

FIG. 6.—Somatotype distribution of 371 boys aged 11 years. (A schematic two-dimensional projection of the theoretical spatial relationships among the known somatotypes.)

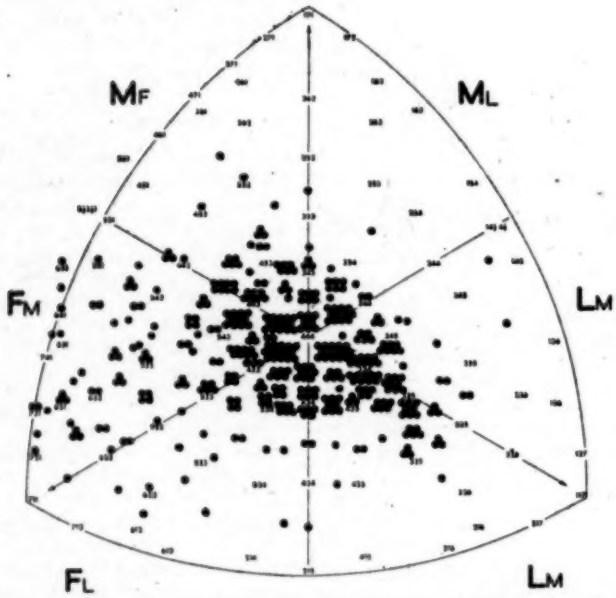

FIG. 7.—Somatotype distribution of 421 girls aged 11 years. (A schematic two-dimensional projection of the theoretical spatial relationships among the known somatotypes.)

The less muscular girls gained the most grammar and technical school places, not surprisingly considering their performance in the individual tests (Lf 35% compared with 18.5% of the rest; $\frac{\text{Diff.}}{\text{S.E. Diff.}}=2.5$) (see Table IV). The fat-muscular girls received significantly few places (15.1% compared with 24.9%: $\frac{\text{Diff.}}{\text{S.E. Diff.}}=2.4$).

In the intelligence test 66.9% of the Lf and Fl girls scored above the mean compared with 39.7% of the rest $\left(\frac{\text{Diff.}}{\text{S.E. Diff.}}=5.3\right)$. Histograms contrasting distribution of

TABLE III.—*Proportion of Children with Above Average Scores, According to Physique*

Sector	No. in Sector	Intelligence %	Arithmetic %	English %	Peel Test, 1954 No. in Sector	Peel Test, 1954 %
Girls						
Mf ..	38	36·8	36·8	44·7	26	42·3
Ml ..	24	62·5	45·8	58·3	17	35·3
Lm ..	79	41·8	51·9	46·8	45	51·1
Lf ..	60	71·6	65·0	71·7	34	73·5
Fl ..	70	62·9	61·4	61·4	51	58·8
Fm ..	121	33·9	34·7	41·3	90	33·3
Central 444	8	50·0	50·0	62·5	4	50·0
Total ..	400	48·5	48·5	52·2	267	47·6
Boys						
Mf ..	83	38·6	47·0	50·6	70	42·9
Ml ..	87	50·6	50·6	48·3	61	52·4
Lm ..	83	48·2	38·6	39·8	53	58·5
Lf ..	13	69·2	69·2	76·9	10	80·0
Fl ..	5	20·0	0·0	40·0	4	25·0
Fm ..	58	51·7	60·3	62·1	45	55·5
Central 444	7	14·3	28·6	14·3	3	100·0
Total ..	336	46·7	47·9	49·4	246	52·8

TABLE IV.—*Proportion of Children Gaining Grammar and Technical School Places According to Physique*

Sector	Girls No. in Sector	Girls % G. and T.P.	Boys No. in Sector	Boys % G. and T.P.
Mf	38	10·5	83	22·9
Ml	24	20·8	87	25·3
Lm	79	19·0	83	24·1
Lf	60	35·0	13	46·1
Fl	70	25·7	5	0·0
Fm	121	16·5	58	34·4
Central 444 ..	8	12·5	7	0·0
Total ..	400	21·0	336	25·9

TABLE V.—*Difference in Proportion of Less Muscular and Other Girls with Above Average Test Scores*

Test	Sectors Lf and Fl %	Remainder %	Diff. / S.E. Diff.
Intelligence test (Moray House)	66·9	39·7	5·3
Arithmetic	63·0	41·5	4·1
English	66·9	45·6	4·0
Peel practical ability test ..	64·6	39·6	4·2

I.Q.s between the better somatotype sectors and the others are shown in Fig. 8. There was a significantly large proportion of high scorers in the same less muscular sectors (Lf and Fl) in both the arithmetic and English tests (see Table V). A similar result was also found among those girls who took the Peel practical ability test.

In all these tests stocky and tubby girls in sectors Fm and Mf did significantly poorly compared with the others. It is interesting that many lean girls (Lm) did well in the intelligence and English tests, but few did so in arithmetic and the practical ability test. The slightly more muscular and less linear girls of sector Ml, on the

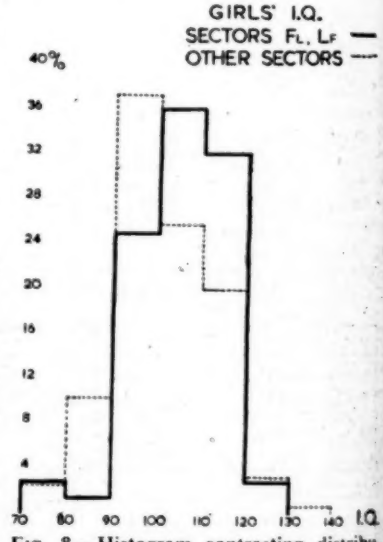

FIG. 8.—Histogram contrasting distribution of girls' I.Q.s in sectors Fl and Lf.

other hand, performed *well* at arithmetic and in practical ability, but *poorly* on English and the intelligence tests.

Boys' Results

The boys' results were not as highly significant as the girls'. This is almost unavoidable with samples of 13 and 5 in the two less muscular sectors. There was, however, a consistent trend throughout all the results. The fattest boys (Fm) were the most successful of the larger samples, and the muscular ones with secondary fat dominance the least successful. In the case of the two small groups, the Lf were outstandingly good (as among the girls), but out of the five boys in Fl none achieved a place at grammar or technical school, see Table IV. The neighbouring sectors were noticeably but not significantly successful in achieving places.

In the intelligence test 12 boys did not take the other papers because of intelligence quotients of less than 70. Of these, 7 were in the Mf sector, representing 7.8% of its population, compared with 1.9% of the rest of the boys $\left(\frac{\text{Diff.}}{\text{S.E. Diff.}}=2.0\right)$. Considering all the boys with I.Q. above the mean, again the Mf sector did comparatively badly with only 35.5% falling into this category, compared with 48.5% among the other physiques $\left(\frac{\text{Diff.}}{\text{S.E. Diff.}}=2.2\right)$.*

In both the English and arithmetic test results, the fat and less muscular boys taken together (Lf, Fl, and Fm) contained more with marks above the mean than the rest of the sample. In arithmetic the proportions were 60% to 46.7% $\left(\frac{\text{Diff.}}{\text{S.E. Diff.}}=2.0\right)$, in English 63.1% to 45.3% $\left(\frac{\text{Diff.}}{\text{S.E. Diff.}}=2.8\right)$.

In the Peel test of practical ability (which was taken only in 1954) the most remarkable feature was the poor performance once again of "north-western" muscular boys with secondary fat (42.9% in Mf compared with 56.8% of the rest).

Athletic Ability

Ratings of athletic ability were obtained through the kindness of head teachers on 285 boys and 306 girls. There were thus several observers, and the proportion of children said to possess athletic ability varied widely from school to school. Only rough conclusions may therefore be drawn, but it was found that for the sample as a whole there was a higher proportion of children (both boys and girls) considered to be good at games among place winners than among the remainder.

Discussion

The finding that low-level performance of both boys and girls was specially associated with a fat-muscular (Mf) type of physique is in striking contrast to the high-level performance associated with fat-linear (Lf) types. Further subdivision of each sector into central and peripheral types showed the average score of central types in these sectors to be higher than those more peripheral. While the establishment of normal variation in intelligence scores according to finer shades of physical classification must await larger samples, it is interesting to note that central Lf boys had a mean I.Q. of 111.9, and 37 girls of similar physique a mean value of 105.6. The lower average scores for peripheral Mf children were: boys 99.3 (n=38) and girls 99.7 (n=16). That central Lf children did best is interesting because in an older group of undergraduates (Parnell, 1954a) the outstandingly good performers in final honours class examinations were endomorphic ectomorphs, whose physique was similar when determined by the appropriate deviation chart for their age. It cannot, of course, be assumed that children typed at 11 would necessarily have the same type allotted to them at the age of 21 even when a comparable method is used: any attempt to compare the prevalence of this physique in school and university population in an exact way is likely to be unreliable; nevertheless, the impression has been gained that men of this physique are relatively much more common in the university population, a situation which could be brought about by progressive academic test selection. The trend is important because the high disposition to psychological difficulty and breakdown shown by men with this particular physique is now well established, whereas it is also known that student endomorphic mesomorphs at Oxford, whose physique is most comparable to that of Mf children, show little disposition to breakdown (Parnell, 1955).

*Both proportions are below 50% owing to slight skewness in the distribution.

Summary and Conclusion

Groups of 371 boys and 421 girls were measured at the age of 11 to obtain standards for somatotyping children by the deviation chart method.

The technique of this objective method of assessing physique in terms of fat, muscularity, and linearity is described, bringing out the points of similarity to and difference from Sheldon's method of somatotyping.

The grammar school entrance marks of 336 boys and 400 girls are compared according to their body build. The slightly smaller sample is accounted for by examination absentees and those who, having scored less than 70 in the intelligence test, did not complete the other papers.

The following conclusions are reached:

1. Absence from the examination was significantly greater among girls with a high fat rating; it was significantly uncommon in boys of linear build.

2. Less muscular girls, and especially those in sector Lf who were linear too, showed significantly high proportions with above-average scores. Their results were consistent for all tests—arithmetic, English, intelligence, and the Peel test of practical ability.

3. A similar trend was found among the boys, although the results were not so highly significant.

Among 12 boys with intelligence scores below 70, there were 7 in the Mf sector, and the lowest proportion of boys scoring above the mean was found in the same area. The same was true of the Peel practical ability test.

Fat and linear non-muscular boys (Lf, Fl, and Fm) did significantly better than the remainder in English and arithmetic.

4. In spite of the tendency to select less muscular children, there was evidence that a higher proportion of those selected, both boys and girls, were considered good at games compared with children failing to obtain places.

5. Certain points of similarity exist between test results at the age of 11 and those discovered in a group of Oxford undergraduates taking their final honours class examination. At both ages linear subjects with more than average fat for their weight were best at examinations. Undergraduates with this type of physique are known to possess comparatively high disposition to psychological breakdown; thus it is not altogether surprising to find high prevalence rates for psychological upset as an associated consequence of intensive academic selection.

We wish to thank Mr. C. F. L. Piggott, Chief Education Officer, City of Oxford, for allowing us access, for the purpose of statistical analysis, to the examination marks, which are otherwise confidential. Dr. J. F. Warin, Medical Officer of Health and

Principal School Medical Officer, City of Oxford, gave us valuable help and advice. Our thanks are also due to the head teachers, without whose kind co-operation the inquiry could not have proceeded so effectively. Miss W. Hunt, of the School Health Department, and Mr. A. D. Hewitt, of the Education Department, also assisted us greatly with practical details. Mrs. G. A. Rainbird kindly drew the diagrams. It formed one part of the research programme at the Warneford Hospital, Oxford, to study methods of physical assessment and the relationship between physique and behaviour, both normal and abnormal.

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FAVUS: A REPORT OF SEVEN RELATED CASES

BY

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Favus, or tinea favosa, is a ringworm infection of the scalp, skin, and nails rarely seen in Britain, though it commonly occurs in Eastern and Central Europe, in the Mediterranean countries, and in the Near East. The majority of British infections have been sporadic and have occurred in widely scattered areas, but small outbreaks have been reported from urban districts. It has been stated that favus is becoming progressively more rare in this country (Whittle, 1947). Walker (1950) isolated the causative fungus, *Trichophyton schoenleini*, on 42 occasions among 2,473 ringworm cultures. These were grown from specimens received from various parts of Britain. We have been unable to trace any reports of this disease in the London area during the last ten years, and it was not diagnosed mycologically among 760 consecutive patients suffering from ringworm infections seen at the Institute of Dermatology in London (Partridge, 1952). Recently, the diagnosis of favus in a London infant led to the discovery of six unsuspected cases and enabled the source of infection to be traced to another town. This outbreak is reported in order to stress the ease with which the nature of the disease may be overlooked.

In an attempt to trace the source of the infection, attention was directed to a day nursery attended by the affected infant (Case 1). All available contacts were examined under Wood's light, with the result that a second case of scalp infection was discovered (Case 2). Finally, it was learnt that the original child had spent three months in the home of a relative in Kent, where, on inquiry, one adult (Case 3) and four children (Cases 4, 5, 6, and 7) in a single family were found to be suffering from favus. Hairs taken from all six of these patients contained fungous mycelium, and *T. schoenleini* was cultured from five of them.

Case Reports

Case 1.—A female child aged 14 months, living in London, was first brought to hospital in October, 1952. She had suffered from a scurfy condition of the scalp since birth, and on examination was shown to have a number of crusted lesions, but no broken hairs, alopecia, scarring, or scutula. A provisional diagnosis of ringworm was made after microscopy had revealed fungous mycelium in extracted hairs, though cultures were unsuccessful. Whitfield's ointment appeared to control the scalp condition, and after six months only two scaly erythematous patches approximately 1 in. (2.5 cm.) in diameter remained. Under Wood's light, however, a greenish fluorescence was observed along the entire length of many hairs distributed in groups over the whole scalp. These hairs were found to contain fungus, and on this occasion *T. schoenleini* was grown from them. While the condition was being reinvestigated local treatment was discontinued, and this resulted in the appearance of typical scutula on the scalp (Fig. 1); there was also spread of the infection to one knee.

FIG. 1.—Case 1. Typical scutula on scalp.

Case 2.—This 1-year-old boy had a single small scaly patch ¼ in. (1.3 cm.) in diameter on the occipital region of his scalp. The lesion, which had been present for six months, was first observed two months after he had been attending the day nursery, where he was a close companion of Case 1. Though hairs growing from the affected area appeared normal, they fluoresced a dull green colour under Wood's light.

Case 3.—A woman aged 33, the aunt of Case 1, had suffered from scalp trouble since the age of 5, resulting in bald patches since she was 18. Various therapeutic measures had been tried without success. She had lived in Yorkshire, but had never resided outside Britain and was unable to explain the source of her infection. Examination showed a large scarred bald area—5 by 4 in. (12.5 by 10 cm.)—over the left parietal region with erythema, scaling, and

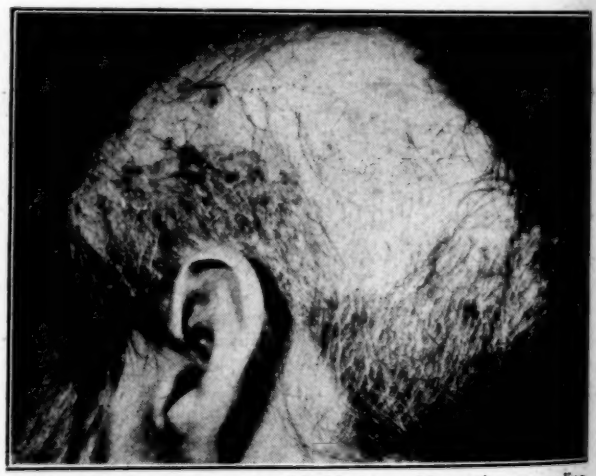

FIG. 2.—Case 3. Large scarred bald area, with erythema, scaling, and scutula at its periphery.

scutula at its periphery (Fig. 2). The hairs in this zone were grey and lustreless, and under Wood's light fluoresced along their entire length. A definite "mousy" odour was detectable.

Case 4.—A girl aged 12; the eldest daughter of Case 3, had had crusting of the scalp since she was 6. She presented with several areas of atrophy and alopecia showing peripheral erythema and scaling, and long fluorescent hairs were again seen.

Case 5.—A second daughter of Case 3, aged 8, had suffered from a scaly scalp since shortly after birth. She had received hospital treatment for this during the previous year, but favus had not been suspected. On examination a widespread scaly condition of the scalp and several small scutula were found; long fluorescent hairs were demonstrable with Wood's light.

Case 6.—A third daughter of Case 3, aged 6, was found to have several scaly patches associated with scutula over the vertex of her scalp; within these areas long fluorescent hairs were found.

Case 7.—The twin sister of Case 6 presented no clinical evidence of favus. Careful examination of her scalp under Wood's light revealed two fluorescent hair stumps in the occipital region which showed the characteristic appearances of *T. schoenleini* infection when examined microscopically. The fungus was not grown.

All these patients, except the last, were treated by hair removal with *x* rays. Complete epilation was achieved except in Case 3, in which a few remaining infected hairs required removal with a diathermy needle. No infected hairs reappeared except in Case 5, in which some infected hair stumps developed; these were treated by follicular cauterization. Case 7 was successfully treated by manual epilation of the hairs involved.

Discussion

The familiar characteristics of a typical case of favus of the scalp represent late manifestations of the disease. Scutula, alopecia, and atrophy were present in Cases 3 and 4, in which the disease had persisted for 28 and 6 years respectively, but no alopecia or atrophy occurred in Cases 1, 2, 5, and 6. Broken hairs are rarely found in this disease, though they were the one diagnostic feature in Case 7. Initially the hairs are usually macroscopically normal, but later lack lustre; under Wood's light a dull, greenish fluorescence may be seen along their entire length—an invaluable method of detecting early infection. This feature is useful, too, in distinguishing favus from *Microsporum* infections, in which bright yellow-green fluorescent hair stumps occur, and from other *Trichophyton* infections where fluorescence is lacking. The mild symptoms and signs of this disease and its insidious progress lead to delay in seeking medical advice. The appearances may be unlike typical ringworm and may resemble those of psoriasis, impetigo, seborrhoeic dermatitis, folliculitis decalvans, and sometimes lupus erythematosus and lupus vulgaris. Consequently, failure to prescribe adequate treatment is not uncommon, and local applications prescribed haphazardly may further confuse the clinical picture.

In all doubtful cases, unequivocal evidence of favus can be obtained only by microscopy and culture. Microscopical examination of hairs in potash reveals mycelium and chains of spores within the shafts, and characteristic elongated air-spaces are seen at the sites of degenerated mycelium. Colonies of *T. schoenleini* grown at 26° C. on Sabouraud's agar are deep cream in colour, compact and glabrous, and have an irregularly corrugated surface. Their rate of growth is very slow, taking about three weeks to reach a size sufficient for macroscopic identification. Microscopical examination of the partially submerged growth may reveal characteristic antler-like hyphae after ten days.

Favus is essentially a human infection caused by *T. schoenleini*, and should not be confused with mouse favus, caused by *T. quinckeanum*. When the latter infection occurs in man it produces acute, vesicular, and circinate lesions within a few days. In man, hair infections are rare, and the scutula seen in murine infections do not occur.

Unlike most other varieties of ringworm of the scalp, untreated favus may, as in Case 3, persist beyond puberty into adult life; spontaneous retrogression occurs only occasionally. Treatment is effective if administered before atrophy and permanent alopecia supervene; epilation with *x* rays is accepted as the most satisfactory method of treatment. Examination with Wood's light is necessary in order to detect infected hairs which have not fallen, and to exclude reinfection of new hairs. Local applications are sometimes successful in early cases but necessitate close supervision.

The group of infections in the family living in Kent appeared to be the source of disease in the first case. The fact that so few children were involved in the day nursery is explained by the low infectivity of the fungus. As in the outbreak described, it is a disease of the family rather than of the school. Every effort should be made to trace the source of infection, since the disease may otherwise go unnoticed and cause disfiguration.

Summary

Seven cases of favus of different degrees of severity are reported from the London and Kent areas. Their diagnosis and the identification of the source of infection are described.

Acknowledgment is made to Dr. G. B. Dowling, Dr. R. H. Meara, Dr. H. T. H. Wilson, and Dr. R. J. Cairns for access to their patients, and to Dr. R. W. Riddell for advice and criticism.

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A TABLET TEST FOR BLOOD IN URINE

BY

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Many chemical tests for blood in urine have been described (Caplan and Discombe, 1951), but because they are insensitive or inconvenient none is in general use. The most sensitive are modifications of the *o*-tolidine method, first described by Ruttan and Hardisty (1912); a blue colour results from the oxidation of *o*-tolidine owing to the peroxidase activity of haemoglobin. The modifications previously described include those of Zwarenstein (1949, 1952) and Baron (1951), but all require the use of glacial acetic acid and are therefore unsuitable for use at the bedside. In the test here described the reagents are compounded into a tablet, and it is only necessary to add water.

Experimental

Tablets were made, each containing citric acid, 50 mg.; barium peroxide, 35 mg.; *o*-tolidine, 12.5 mg.; and sodium carbonate, 2.5 mg. If the tablets are kept in a container with a screw cap, and the cap is replaced immediately one is removed, they have been found to retain their full sensitivity for at least twelve months.

Tablet Test.—Various quantities of urine were tried (see Table I), and the following method was selected as giving the best results. One drop of the urine to be tested (0.05 ml. from a teated pipette) is placed on an inch square (2.5 by 2.5 cm.) of filter paper (Whatman No. 1) and allowed to

TABLE I.—*Various Methods of Performing the Test Compared (Time in seconds after moistening the tablet for a definite "positive" to appear)*

Method Used	No. of Red Cells per c.mm.				
	500	50	25	12·5	0
1 drop urine followed by 2 drops cold water ..	40	110	200	240	15 min.
2 drops urine followed by 2 drops cold water ..	35	80	150	180	15 ,,
1 drop urine followed by 2 drops hot water (60° C.)	15	40	110	140	3 ,,
1 drop urine followed by 2 drops urine	60	140	180	200	15 ,,

spread. Then one reagent tablet is placed on the centre of the paper and two drops of cold tap-water are allowed to flow over the tablet. If a significant amount of haemoglobin is present a blue ring develops around the tablet within two minutes; any colour appearing in the paper after this interval and any discoloration of the tablet itself are disregarded.

Microscopy.—The tablet test was used to examine 100 specimens of urine sent to the laboratory for routine investigation, and the results were compared with those of microscopical examination. 10 ml. of urine was centrifuged at 1,500 revolutions per minute for five minutes, and after 9.5 ml. of supernatant fluid had been removed the deposit was examined as an ordinary wet film with the ⅛-in. (4-mm.) objective; twenty fields were examined and two or more red cells per field was considered abnormal.

Urine Specimens.—Blood from the same volunteer was added to freshly voided urine to produce a series of dilutions from 1:1,000 to 1:1,000,000, giving a concentration of 5,000 to 5 red blood cells per c.mm.

Results and Discussion

The results are shown in the tables, and, unless otherwise stated, all tests were performed by the described method on urine without alteration of *p*H or temperature.

A definite blue colour appears around the tablet within two minutes if the urine contains at least 50 red cells per c.mm. or the equivalent concentration of haemoglobin (150 μg. per 100 ml.). If a smaller quantity is present a blue colour develops after two minutes; and if none is present the tablet and filter paper remain colourless for at least fifteen minutes.

The test is equally sensitive throughout the temperature range 4–37° C. If the urine is heated to 60° C. or boiled, the test is much less sensitive (Table II).

TABLE II.—*Effect of Temperature (Time in seconds after moistening the tablet that a definite "positive" appears)*

Treatment of Specimen	No. of Red Cells per c.mm.				
	500	50	25	12·5	0
Room temperature (20–25° C.)	40	110	200	240	15 min.
60 min. refrigeration at 4° C.	55	110	180	250	15 ,,
60 min. incubation at 37° C.	45	100	180	230	15 ,,
30 ,, ,, ,, 60° C.	100	15 min.	15 min.	15 min.	15 ,,
60 ,, ,, ,, 60° C.	15 min.	15 ,,	15 ,,	15 ,,	15 ,,
½ min. boiling	80	15 ,,	15 ,,	15 ,,	15 ,,
1 ,, ,, ...	15 min.	15 ,,	15 ,,	15 ,,	15 ,,

TABLE III.—*Influence of pH (Time in seconds after moistening the tablet that a definite "positive" appears)*

*p*H	No. of Red Cells per c.mm.				
	500	100	50	25	0
10	15	90	180	300	15 min.
9	15	90	180	300	15 ,,
8	15	60	90	240	15 ,,
7	25	60	100	140	15 ,,
6	30	60	100	120	15 ,,
5	35	60	120	150	10 ,,
4	40	70	150	200	8 ,,
3	40	80	150	200	8 ,,

Variation of urinary *p*H within the range of *p*H 5–8 has no significant effect on the sensitivity, which is, however, slightly reduced if the urine is either very alkaline or very acid (Table III). This can be avoided, if necessary, by adjusting the *p*H until just acid or alkaline to litmus. In practice it is of little consequence.

If the ascorbic acid content of the urine being tested is high some false negatives may be encountered (Table IV). This is of little importance, however, for, unless ascorbic acid is being administered, the urinary concentration is rarely above 5 mg. per 100 ml. In order to achieve 10 mg. per 100 ml. it was found necessary to give 200 mg. daily for four days; and to achieve 100 mg. per 100 ml., 800 mg. daily for four days.

TABLE IV.—*Effect of Ascorbic Acid (Time in seconds after moistening the tablet that a definite "positive" appears. All specimens incubated for one hour at 37° C. before testing)*

Ascorbic Acid, mg. per 100 ml.	No. of Red Cells per c.mm.					
	5,000	1,000	500	50	25	0
0	5	20	35	110	200	15 min.
5	5	20	40	120	240	15 ,,
10	35	80	100	300	15 min.	15 ,,
25	40	80	120	15 min.	15 ,,	15 ,,
50	40	100	240	15 ,,	15 ,,	15 ,,
100	40	120	280	15 ,,	15 ,,	15 ,,

False-positive results occurred if the urinary concentration of iodide was greater than 20 mg. per 100 ml., a level that is obtained if the patient is taking Lugol's iodine, 10 minims (0.6 ml.) three times daily, or such mixtures as mist. stramon. et pot. iod. *N.F.* ½ oz. (14 ml.) three times daily. In such cases the urine should be boiled for one minute and immediately retested. If the colour is due to iodide it will now be deeper, whereas if due to blood a "negative" will be obtained.

Pus (unless red cells were also present), bromides, and sweat gave negative results, but any oxidizing agent will also give a false positive.

The desirable sensitivity of a chemical test for blood in urine depends upon the number of red cells that may be excreted by normal persons. It has been estimated by Larcom and Carter (1948) that up to 2 red cells per c.mm. may be present in the urine of normal adult males. Comparable figures for normal females are not available, but from the results obtained with the tablet (see below) it would appear that the figure may be ten times as great.

It has been shown that the tablet test will detect 50 red cells per c.mm. To demonstrate the rarity of significant haematuria below this level, and to show that a more sensitive test would give positive results with many normal urines, three separate series of experiments were made.

Series I.—One hundred specimens of urine sent to the laboratory for routine investigation were tested with the tablet and 42 gave positive results. Confirmation was obtained by microscopy of the centrifuged specimen. Neither false positives nor false negatives were encountered.

Series II.—Ordinary urine specimens from 100 male and 50 female patients, without known haematuria, were tested with the tablet and 13 gave positive results. In every case further investigation showed a pathological cause.

Series III.—It was found that, when 12.5 ml. of urine to which had been added 5 red cells per c.mm. was centri-

TABLE V.—*To Demonstrate that Urine from Normal Females may Contain 5–50 Red Cells per c.mm. (Series III in text)*

Before Concentrating				After Concentrating			
Male		Female		Male		Female	
Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.
0	50	0	50	0	50	32	18

The concentration of red cells in the urine specimens was increased tenfold by centrifuging 12.5 ml. at 3,000 revolutions per minute for ten minutes and removing 12 ml. of supernatant fluid.

fuged at 3,000 revolutions per minute for 10 minutes, and 12 ml. of supernatant fluid was pipetted off, the deposit gave a positive result with the tablet and presumably contained at least 50 red cells per c.mm. One hundred ordinary specimens, which on routine microscopy were not abnormal, were treated in this way and the deposits tested with the tablet. The results showed that urine from normal females frequently contains between 5 and 50 red cells per c.mm. (Table V).

Conclusion

The tablet has been used during the last six months as a routine test in a general medical ward and in the casualty department of a teaching hospital. In no case has haematuria been found by the pathological laboratory when the tablet had given a negative result. The tablet has been found particularly valuable as corroboratory evidence in a clinical diagnosis of cystitis or pyelitis, and as a daily test to discover when known haematuria ceases. It has also been found useful as an additional safeguard to prevent overdosage with anticoagulant drugs.

Summary

A tablet to detect the presence of blood in urine is described. The test is sensitive to a minimum concentration of 50 red cells per c.mm. or of 150 μg. of haemoglobin per 100 ml. of urine. It is reliable and simple to perform.

The influence of *p*H and temperature is described, and has been found to be small.

It is considered that the tablet is useful as a screening test and to decide when known haematuria ceases.

I wish to thank Professor C. H. Gray and Dr. Arthur Jordan for their advice and encouragement, and Mr. J. E. Cocking, chief pharmacist at Sheffield Royal Hospital, for help in preparing the tablets. While this work was in progress it was discovered that Messrs. Ames Co. Inc. had prepared a similar tablet. This tablet has been examined and found identical in all its properties, except that a negative remains colourless for only five minutes. It is hoped that their product will be available soon. My thanks are due to Messrs. Ames Co. (London) Ltd. for their co-operation and for supplies of both their own and my tablet.

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Medical Memoranda

Myxoma of the Auricle

Upwards of one hundred cases of myxoma of the auricle have been reported in the literature; the present case is described not so much on account of its unusual features as to stress once again the importance of keeping in mind the possibility of a cardiac neoplasm. A diagnosis prior to necropsy is still virtually impossible, but the time must surely come when this condition will be revealed at thoracotomy in a case mistakenly diagnosed as mitral stenosis.

Case Report

A well-nourished man of 35 was first seen in February, 1953, complaining of dyspnoea on exertion for the past month. He had had a brief attack a year before. He was troubled by nausea and fairly frequent vomiting, loss of weight, and a sensation of great weakness. There was no history of rheumatic fever. He had a slight malar flush and slight cyanosis; the pulse was small and regular; there was no thrill, and the apex beat was 3½ in. (9 cm.) from the midline in the fifth space. A faint blowing systolic murmur was heard at the apex, and the faintest diastolic rumbling murmur was heard just inside the apex only when the patient was lying on the left side. There was no evidence of congestive failure. Radiologically the transverse diameter of the heart was increased and its left border straightened. Screening with a barium swallow showed moderate simple enlargement of the left auricle. Neurofibromatosis was also present in the form of small nodules on arms and back, with café-au-lait patches. A diagnosis of mitral stenosis was made: the prognosis was considered to be favourable.

He was seen again a month later, by which time the vomiting had stopped and the diastolic murmur had become inaudible. He seemed well enough to carry on with his job as a fitter. On April 30 he was still at work. The systolic murmur had become much louder.

Photograph showing the tumour.

On July 23 he was admitted to hospital in cardiac failure with gross oedema of the ankles, raised neck veins, hepatomegaly, and an apex beat 4½ in. (11.4 cm.) from the midline. The low-pitched diastolic murmur had reappeared and triple rhythm was apparent. He had had a "chill" in May and on getting up from bed after five weeks had first noticed that his ankles were swollen. He was treated with digitalis and mercurial diuretics but failed to respond, and after he had been ten days in hospital we began to doubt the accuracy of the diagnosis, casting about in our minds for an explanation of such acute cardiac failure without any new features in the heart sounds, apart from the triple rhythm, and without evidence of pericarditis or a recurrence of acute rheumatic carditis.

An *x*-ray film of July 29 showed gross generalized cardiac enlargement, small pleural effusions, and the appearance of an infarct in the right lower lobe. Little did we realize the true state of affairs. Steady deterioration, in spite of treatment, ended in death on August 16, the pulse remaining regular, and the anasarca increasing day by day.

Necropsy Report

External Examination.—The body was that of a young man showing gross oedema from the waist downwards. There were scattered café-au-lait spots and occasional neurofibromatous nodules in the skin. Some cyanosis was present.

Internal Examination.—C.V.S.: There was excess clear yellow fluid in the pericardial sac. The heart was enormously enlarged, mainly from hypertrophy of the left auricle, right auricle, and right ventricle. The myocardium was somewhat flabby but free from obvious lesions. The valves were normal except for some incompetence due to the dilatation. The whole of the left auricle was occupied by a shiny, sessile tumour measuring 7.5 by 6 by 4 cm. attached to the interauricular septum above the rim of the annulus ovale (see photograph). So tightly was the wall of the auricle stretched over the tumour that it was impossible to approximate the cut edges after the tumour had been exposed. The main vessels were normal, but the aorta appeared hypoplastic. *Respiratory System:* The larynx, trachea, and main bronchi contained blood-stained mucus. Both lungs showed numerous large infarctions and were grossly oedematous. About one pint (570 ml.) of clear yellow fluid was present in each pleural cavity. There was some fibrinous deposit over

the larger infarctions. *Abdomen:* The liver showed chronic nutmeg change with early cardiac cirrhosis. The spleen was about one and a half times normal size. The remaining abdominal organs were normal. *Lymphatic System:* The glands of the neck and chest were grossly oedematous and much enlarged, but the cut surface appeared normal. The brain was not examined. Cause of death: (*a*) congestive cardiac failure, and (*b*) myxoma of left auricle.

COMMENT

Viewing this case retrospectively, it is unlikely, even if the true diagnosis had occurred to us as a possibility, that we would have been disposed to retreat from the diagnosis of mitral stenosis, since the clinical pattern could be fairly well correlated with its aetiological type and the signs of failure were not disproportionate to the physical findings. Like most cases of cardiac myxoma, however, this one presented with severe cardiac failure, relentlessly and rapidly progressing and failing to respond to any treatment. A large proportion of the cases in the literature presented with systolic and diastolic apical murmurs. Several of the features frequently found in myxoma of the heart were absent: namely, preference for lying flat for the relief of the dyspnoea; embolic phenomena from fragments of the tumour; sudden onset with fainting attacks; and sudden death.

The E.C.G. did not show enlarged P waves and right ventricular strain as reported in some cases.

The deceptive resemblance of this case to one of mitral stenosis, when considered feature by feature, was quite remarkable.

Our thanks are due to Mr. J. Corbett, of the Worcester Royal Infirmary, for the photograph. We are indebted to Dr. F. Kurrein for the necropsy notes.

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Sudden Operative Death Due to Tumour Embolism

Sudden and unexpected death on the operating table is, fortunately, a rare occurrence. The following unusual case is reported.

CASE REPORT

A man of 63 gave a history of repeated vomiting for nine months, during which time he had lost about 2 st. (12.7 kg.) in weight. There were no urinary symptoms.

On examination he was thin and had obviously lost weight. He was 5 ft. 4 in. (163 cm.) tall and weighed about 8 st. 12 lb. (56.2 kg.). There were two upper abdominal scars from previous operations. His first operation was probably for closure of a perforation and the second was a gastro-enterostomy performed in 1931. The right kidney was enlarged. The left kidney, liver, and spleen were not palpable. Clinical examination of the respiratory and cardiovascular systems showed no abnormality except mild hypertension (B.P. 160/90). The Hb was 83% (Sahli). The W.R. was negative. Pyelography revealed a gross filling defect of the right renal pelvis and calices, suggestive of a renal tumour. Chest *x*-ray examination showed no evidence of metastatic disease. As a result of these findings a right nephrectomy was undertaken.

The patient was given morphine, ¼ gr. (11 mg.), and atropine, 1/100 gr. (0.65 mg.), subcutaneously an hour before operation. Anaesthesia was induced with thiopentone, 400 mg., and D-tubocurarine chloride, 15 mg. After inflation of the lungs with oxygen, a cuffed endotracheal tube was passed under direct vision. Anaesthesia was maintained with cyclopropane and oxygen, respiration being assisted for about 10 minutes but controlled thereafter.

With the patient in the lateral position, an incision was made parallel to the right 12th rib, extending round into the right iliac fossa. The muscles were divided and the perinephric fat was exposed. A very large irregular hypernephroma presented; it was exceedingly difficult to mobilize. On its surface were numerous large distended veins suggesting obstruction of the renal vein.

The patient's condition was quite satisfactory and his blood pressure was well maintained until about half an hour after the start of the operation, when his pulse ceased suddenly. Confirmation of the absence of the heart beat was obtained by palpation of the aorta. At this point the tumour had been mobilized and all but delivered through the incision. Methedrine (30 mg.) was injected intravenously, the veins being still prominent, and cardiac massage attempted, but without effect. Death was apparently immediate. There was no bronchospasm, since inflation of the lungs was uniformly easy at all times.

The main finding at necropsy was a large tumour embolus in the right pulmonary artery, completely occluding this vessel. There were no metastatic deposits in the lungs. The para-aortic glands, from the coeliac axis to the bifurcation of the aorta, were invaded by tumour, and metastases were present in the bodies of the 12th thoracic and first three lumbar vertebrae. The right kidney had been removed at operation. No tumour was discovered in the remaining small proximal portion of renal vein and there was no evidence of tumour in the inferior vena cava. Apart from the above findings and the presence of a long-standing gastro-enterostomy and one or two old adhesions between the duodenum and coils of jejunum, there were no other pathological findings.

The specimen removed at operation consisted of a kidney and tumour weighing 945 g. It measured 6 by 6 by 3 in. (15 by 15 by 7.5 cm.). Only the upper pole of the kidney with two pyramids remained intact. The rest of the kidney was invaded, and stretched over a mass of tumour which had compressed and distorted the renal calices and pelvis, but had not appeared to invade them. Externally the tumour had caused coarse lobulation of the kidney; much of it was necrotic and haemorrhagic, and the best-preserved portion consisted of lobules of soft greyish-white tumour tissue. The growth was confined laterally by a peripheral zone of renal substance and renal capsule; medially it had extended towards the midline and projected 2½ in. (6.3 cm.) beyond the normal pelvi-ureteric junction. No invasion of renal veins could be seen on naked-eye examination of the specimen.

Microscopically the tumour was a renal carcinoma which, in the better-preserved areas, was composed of large cuboidal cells arranged both in a coarse papilliferous manner and in solid sheets of cells. The nuclei were vesicular, and many of them contained a single prominent nucleolus; mitotic figures, although present, were few in number. Necrosis and haemorrhage were widespread throughout the tumour. Although no tumour was seen in the renal vein on naked-eye examination, it was obvious microscopically that several larger veins at the hilum of the kidney had become involved.

The embolus in the pulmonary artery was composed of tumour cells similar in appearance to those of the primary growth in the kidney.

The cause of death in this case was a massive pulmonary embolus of tumour tissue which presumably had been dislodged from the renal vein during operation.

Comment.—We have been able to find only two published reports (Pettersson, 1941; Mimpriss and Birt, 1949) of death due to tumour embolism at operation, which is surprising in view of the frequency with which hypernephroma spreads into the renal vein and even into the inferior vena cava.

We wish to thank Mr. W. A. D. Adamson for permission to publish this case, and Professor A. M. Drennan and Dr. John Gillies for helpful advice.

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Reviews

PAEDIATRICS FOR PRACTITIONERS

Paediatrics for the Practitioner. Under the general editorship of Wilfrid Gaisford, M.D., M.Sc., F.R.C.P., and Reginald Lightwood, M.D., F.R.C.P., D.P.H. Volumes I, II, and III + Index. (Volume I—pp. 563 + xv + 34 pp. index; Volume II—pp. 533+ix+32 pp. index; Volume III—pp. 632+xi+38 pp. index; Index—pp. 119+v. Illustrated. £13 10s. the set.) London: Butterworth and Co. Ltd. 1953, 1954, and 1955.

The last of the three volumes of this work has now appeared along with an index volume, and a set is completed that will be of value to practitioners in many lands. The articles are written by experts in the different subjects, and naturally the descriptions of diseases and their diagnosis and treatment are authoritative.

The books are said to be planned and written for the family doctor, but they constitute a small reference library to the present practice of paediatrics in its medical, dermatological, psychiatric, and other branches. Surgical conditions and the diseases of the eye, nose, ear, and throat are dealt with—and rightly so in a comprehensive work on the health and diseases of children. Tropical conditions and illnesses are well described. Throughout the work pathology, by intention, is dealt with very briefly, and only the more important references are given.

About sixty contributors from Britain and other parts of the Commonwealth have written the various chapters, but the volumes have been well edited and the multiple authorship is not very noticeable, although some of the articles are better written than others. Rubrics and the good index make the volumes easy of rapid consultation, and the plentiful photographs and radiographs will prove very helpful to practitioners.

The three volumes and the index are printed on good art paper and are well bound. The price is high, however, and one wonders if it could have been reduced by getting the articles and the index into, say, two volumes. The repetition of the appointments held by the contributors and the needless list of contents at the heads of the chapters, however small, might have been dispensed with and space thereby saved.

Family doctors will consult these good books with profit to their patients and pleasure to themselves, and the initial cost appears less when it is remembered that the work is to be kept up to date by regular supplements.

JOHN CRAIG.

RADIOBIOLOGICAL RESEARCH

Biological Effects of External X and Gamma Radiation. Part I. Edited by Raymond E. Zirkle. (Pp. 530+xxvi; illustrated. 58s.) London, New York, Toronto: McGraw-Hill Book Company Inc. 1954.

This book is an account of some of the radiobiological research carried out in the United States at the Metallurgical Laboratory of the University of Chicago and the National Cancer Institute, Bethesda, during the war between September 1, 1942, and June 30, 1945. The various chapters are based on reports issued, with one exception, between June, 1946, and April, 1947; many of the reports have been included in the well-known MDDC series. In a number of the chapters more recent experimental evidence has been added. As the editor points out, the work was subject to the usual disadvantages of wartime research and development, especially haste and security regulations, but "on the other hand it proceeded under very advantageous financial support." It was inevitable that most of the writing was done rather hurriedly, because immediately after the war many of the authors were returning to their civilian positions.

The first six chapters deal with effects of long-continued total body gamma irradiation of mice, guinea-pigs, and rabbits, and are a valuable summary of the experiments carried out by the late Egon Lorenz and his colleagues. Of particular interest is Chapter 4, on the effects of chronic irradiation on the breeding behaviour of mice. Chapters 7 to 13 deal with studies of total body irradiation of rabbits and are a useful summary of the work of Leon O. Jacobson and his colleagues. It is unfortunate that Chapter 13, entitled "Heparinemia (?) An Anticoagulant in the Blood of Dogs with Haemorrhagic Tendency after Total-body Exposure to Roentgen Rays," appears only in abstract form. Although it has been published in full elsewhere (*J. exp. Med.*, 1948, **87**, 71), it is an interesting piece of work and it would have been useful to include it in this volume. Of the biochemical work reported in Chapters 14 to 20 the studies of the effects of *x* rays on the activity of enzymes and on tissue metabolism, by E. S. Guzman Barron, are now recognized as classical contributions. Interesting information not otherwise easily available is given in Chapter 21 on the effectiveness of drugs in preventing or alleviating *x*-ray damage.

It would be easy to criticize this book as hastily written and inadequately edited. However, such criticism would be unfair, because it would not have been possible to produce this volume without these inevitable and essentially minor defects. Although most of the work described is no longer new and has already been incorporated into current knowledge, it is useful to have these reports collected together in a single volume.

The book as a whole is a valuable contribution to radiobiology, and is a tribute to the wisdom of Professor Arthur H. Compton and Dr. Robert S. Stone in the planning and carrying out of a major wartime project of radiobiological research.

J. S. MITCHELL.

CLINICAL DIAGNOSIS

Clinical Diagnosis. By Elmer G. Wakefield, B.S.A., B.Sc., M.D., F.A.C.P. (Pp. 1,611+ix; illustrated. $22.50.) New York: Appleton-Century-Crofts Inc. 1955.

Professor Wakefield here presents an imposing and beautifully produced volume which really combines instruction in clinical methods with a description of diseases such as is normally encountered in a textbook of medicine. The arrangement of the contents is unusual and must be studied in order to obtain full value. Thus regional diagnosis with emphasis on history, examination, and descriptive terms is followed by chapters on systemic diseases. The third part is headed "The Body as a Whole," and here we must search for infectious diseases, allergy, and other constitutional maladies. The author through his work shows originality of thought and presentation and can rest assured of success.

A. H. DOUTHWAITE.

THE PULMONARY CIRCULATION

The Auxiliary Heart. By William Walter Wasson, M.D. (Pp. 184+xix; illustrated. 75s.) Springfield, Illinois: Charles C. Thomas. Oxford: Blackwell Scientific Publications. 1954.

The "auxiliary heart" referred to in the title of this book is the pulmonary circulation. This monograph studies the events which take place in the thorax—breathing and so forth—to help the flow of blood from the right side of the heart to the left. Without these the author believes that the circulation through the lungs could hardly be maintained. The anatomy of the lungs is discussed and then the physiology. There are a number of good diagrams and pictures of models; also some sections oddly called microphotographs. Much importance is attached to measurements of the thickness of the wall of the right ventricle, but no explanation is given of the method of measurement—important when one remembers what the wall of the ventricle is really like. Here and in the chapter on physicodynamics there are plenty of facts, but they come ill arranged and lack clear and orderly presentation. There is nothing about the important matter of the control of the pulmonary

arterioles. The chapter on the evaluation of the *x*-ray film rather loses its value, for the films shown in illustration have little worth. The chapter on the diaphragmatic syndrome leaves one in the dark as to its nature. The name of Hitzenberger is looked for in vain. The historical sketch omits the name of Osler in connexion with Servetus. It is satisfactory to note that someone in 1943 realized that Harvey discovered the pulmonary circulation; but this chapter is perhaps the best in the book.

TERENCE EAST.

EXTRACELLULAR FLUID

Chemical Anatomy, Physiology and Pathology of Extracellular Fluid: A Lecture Syllabus. By James L. Gamble. Sixth edition. (Pp. 164; 68 charts. 18s.) Cambridge, Massachusetts: Harvard University Press. London: Oxford University Press. 1954.

J. L. Gamble must be reckoned as one of the founding fathers of electrolyte studies, and the appearance of a new edition of his monograph on extracellular fluid represents the republication of a classic. His diagrams have been much used and widely copied, and their very excellence has now made "Gamblegrams" familiar. The present edition contains 68 charts, of which three are new. Chart 3 shows the "osmolar equality of body fluids"—a matter not beyond controversy. Chart 55 documents very clearly the reciprocal relationship between sodium and potassium balance. Chart 67 expresses the results of Carl Schmidt (1850) and von Bunge (1873) in modern terms. There has been some minor revision of the text, and in Chart 2 sodium has been admitted into intracellular fluid. Otherwise there is little alteration since the 1942 edition, and to some extent this reflects the stability of the foundations which were then laid.

In some ways revision could profitably have been more radical; in other words, it is now almost impossible to describe extracellular fluid in comparative isolation from cellular metabolism and renal tubule-cell function. Darrow's work on potassium depletion and extracellular fluid composition is not dealt with, nor are the studies of Pitts and others on the effects of fixed acid and alkali, and of carbon-dioxide tension, on the composition of the urine and so of extracellular fluid. These seem to me important omissions in judging a current monograph, but I would not wish to obscure the solid merits of a work which has served decades of students, and which many who have not been able to obtain previous editions will wish to possess.

D. A. K. BLACK.

CONSULTING-ROOM GYNAECOLOGY

Office Gynecology. By J. P. Greenhill, B.S., M.D., F.A.C.S. Sixth edition. (Pp. 517; illustrated. 60s.) Chicago: Year Book Publishers Inc. London: Interscience Publishers Ltd. 1954.

The prospective reader of this book should realize that it is not a textbook of gynaecology. It is an American volume written as a guide to those doctors (not necessarily gynaecological specialists) who have to deal with gynaecological problems in their practices. As its name implies, it gives an account of all those procedures of diagnosis and treatment which can be carried out in the consulting-room or "office." Naturally it reflects Transatlantic opinion, and in regard to the subject-matter more than in any other respect the differences between American and British practice can be judged, for it deals with some procedures—for example, culdoscopy—which gynaecologists in this country would scarcely consider suitable for the consulting-room.

The author's eminence in his specialty and his reputation in the literary field are well known. It is not surprising, therefore, that this book is now in its sixth edition. For this it has been thoroughly revised and enlarged, while the production remains of a high standard, and the illustrations are adequate. It contains much up-to-date and essentially practical information on the majority of gynaecological topics, while it deals with some matters—for example, contraception, psychosomatic gynaecology, and premarital examination—which are not adequately dealt with in most gynaecological textbooks.

This is a "different" book which could be read with benefit by many practising gynaecologists. In particular it should prove useful to registrars, house officers, and others who may be embarking on the practice of gynaecology and require guidance on practical problems.

MOSTYN P. EMBREY.

WILLIAM AND CHARLES MAYO

The Doctors Mayo. By Helen Clapesattle. Second edition, condensed. (Pp. 426+xiii; illustrated. 38s.) Minneapolis: University of Minnesota Press. London: Oxford University Press. 1955.

William Worrall Mayo was an impetuous youth who left Salford to try his fortune in America. He had received some medical training in England and obtained a diploma in America. After many vicissitudes he settled in general practice in Rochester, Minnesota, where he began to do some surgery. He married Louise Abigail Wright, a wise and clever woman whose balanced judgment and common sense offset her husband's impatient and quixotic temperament. Their two sons, William and Charles, were brought up in a surgical atmosphere, and after qualification joined their father in practice. Surgery was just about to take a big leap forward, and the two sons were clever, modest, enterprising, eager to learn, courageous, and hard-working. Both were excellent technical surgeons, and their good results were freely discussed in the local papers. They travelled anywhere to learn new techniques, their reputations deservedly and rapidly increased, and their surgical clinic was run on business lines.

This might have sufficed for most men, but William Mayo was an administrative genius, a man with far-seeing vision who could "lay out broad policies," and gradually the busy clinic was organized on a gigantic scale. It was a business concern with large profits; but the mind of William Mayo was benevolent, and he and his brother were inspired by the teaching of their father that "any man who has physical strength, intellectual capacity, or unusual opportunity, holds such endowments in trust to do with them for others in proportion to his gifts." Thus arose the Mayo Foundation and the vast scheme for postgraduate medical education in connexion with the local university.

The story told in this interesting book is remarkable, but the opportunity could never happen again. We are sorry to see that the erroneous statement is made on page 75 that Henry Wellcome married the daughter of Mr. Burroughs. On page 247 we think "Peterson" should read "Paterson." Line 29 on page 236, which reads "professor of the common duct," is obviously wrongly set up.

We would like to recommend to all who are about to make a speech the advice given by William Mayo—advice which should be written in letters of gold on the walls of every hall in which meetings are held: "Begin with an arresting sentence; close with a strong summary; in between speak simply, clearly, always to the point; and, above all, be brief." William Mayo followed his own advice. He was a wise man.

ZACHARY COPE.

The Medical Directory for 1955 (J. and A. Churchill Ltd., London, 72s.), which is now available, follows the form adopted last year of listing the 83,192 names in alphabetical order without any topographical distinction. The first volume gives details about medical periodicals, medical trades, the General Medical Council, and so on. The second volume contains the "local lists," and the usual information about health departments, colleges, medical schools, postgraduate institutions, the hospitals of the various regions, and a "late list" of newly qualified practitioners and changes of address notified too late for inclusion in the main alphabetical list. Messrs. J. and A. Churchill are to be congratulated on the continuing high standard of accuracy of this work.

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THE PRESIDENTIAL ADDRESS

Dr. T. C. Routley's official career as General Secretary of the Canadian Medical Association having just ended, his colleagues in Canada have shown their appreciation of his notable services by nominating him President not only of the Medical Association of the great Dominion but also of the B.M.A.—the latter nomination receiving the unanimous endorsement of the Representative Body when it formally elected him at the Cardiff meeting in 1953. During the first four days of this week Dr. Routley has been presiding, at Toronto, over the Joint Annual Meeting of the British Medical Association, the Canadian Medical Association, and the Ontario Medical Association in Toronto, and the presidential address which he gave last Monday evening appears in our opening pages. This is the fourth time that the British Medical Association has met in Canada, and Dr. Routley, by examining the records of the three previous meetings—in 1897, 1906, and 1930—clearly shows how the rapid assimilation of new knowledge revolutionizes medical practice, yet at the same time complicates rather than simplifies the task of the doctor. In spite of great successes in the preventive and therapeutic fields, the weight of medical responsibility is probably heavier than it has ever been—the recent difficulties with the mass vaccination of children against poliomyelitis might be cited as a case in point—and it is therefore all the more important that the medical profession as a whole should be able to speak with one voice. In seeking to bring this about Dr. Routley has been a great and beneficent force in welding Canadian doctors into a harmonious unity and in promoting those things that matter in the life of an organization of professional men and women. But, more than that, he has been an ambassador at large for his own country wherever doctors have gathered together in professional conferences. For years he has been a familiar figure at the annual meetings of the American Medical Association, and he has many times been with us at our meetings in Britain.

Dr. Routley has never let his vision be distracted by over-preoccupation with the daily tasks of administration. He has wisely seen these as means, not as ends. And the principal end has been co-operation among doctors the world over to promote health and to alleviate suffering; and also to foster relationships between medical men of differing nations—in other words to spread the idea of Commonwealth among the medical men and women of the world. So it was not unexpected to find him an active force in the formation of two important international medical organizations—the World Health Organization and the World Medical Association, both of them having their origins in bodies established in the years between the two world wars, and both of them, in effect, having a renaissance in the year after the end of the war, in 1946. Dr. Routley outlines the objects of these two organizations in the latter part of his address, and draws timely attention to the fact that co-operation with W.H.O. is an active aim of the W.M.A. The World Health Organization is an intergovernmental specialized agency of United Nations. It receives its funds from its member states; it has a large central administration in Geneva; its concern is principally with the promotion of public health measures. The World Medical Association is an international organization of national medical associations. Its funds come partly from the subscriptions of its member organizations and principally from benefactors and medical men and groups in the U.S.A. It has a small, hard-worked secretariat in New York; its concern is largely with the problems of medical care for the individual sick person, involving as this necessarily does the education of the doctor and his code of ethics. As Dr. Routley points out, these two international medical organizations are complementary to each other, not duplicating mechanisms. Their evolution owes much to the President of the B.M.A. for the coming year, and the W.M.A. in particular is a witness to his foresight and his faith in internationalism in medicine. The world of medicine is much indebted to him.

ELECTROLYTE BALANCE IN CARDIAC FAILURE

The disturbances of electrolyte balance in congestive cardiac failure are complex,[1] but retention of sodium by the kidneys is an early important feature. A proportional amount of water is also retained in an attempt to preserve the normal osmotic pressure of the extracellular fluid. This leads to expansion of the extracellular compartment, and a fall in the concentration of sodium. The passage of the excess sodium ions into the cells replaces potassium ions, which pass out of the cells and are

rapidly excreted. The passage of sodium ions out of the extracellular space in excess of chloride ions produces a relative acidosis. There is therefore sodium retention, potassium deficit, slight acidosis, and oedema, but the serum sodium is low because of dilution. In these circumstances the administration of mercurial diuretics and a diet low in salt is usually dramatically effective. The diuretics act on the renal tubules to produce diuresis primarily of chloride but secondarily of sodium and water.

But overenthusiastic use of mercurial diuretics, especially in conjunction with a diet very low in sodium, may result in disaster. H. A. Schroeder[2] described a syndrome consisting in falling urinary output, rising blood urea, low concentrations of serum sodium and chloride, restlessness, drowsiness, hypotension, and circulatory collapse due to excessive depletion of body sodium ("low-salt syndrome"). While this occurs occasionally, a much commoner electrolyte disorder following mercurial therapy is hypochloraemic alkalosis, caused by depletion of chloride in excess of sodium. This leads to alkalosis, often associated with hypopotassaemia, and to resistance to mercurial diuretics. Attempts to force a diuresis by administering more diuretics are ineffectual and may even be dangerous, as D. Newman[3] has recently pointed out. As well as cardiac failure persisting, the symptoms and signs of potassium deficiency may appear—weakness, hypotonia, and (especially if the patient is on digitalis) frequent ventricular ectopic contractions. Sudden death from a cardiac arrhythmia may then follow.

Some knowledge of the broad outlines of the biochemical deviations apt to accompany congestive failure is essential for the efficient management of patients with this condition. In general, it is wise not to administer mercurial diuretics more frequently than twice a week. A falling urinary output in patients so treated indicates the need to seek the cause of the failure to respond to mercurials rather than to increase the frequency of their administration. Usually some degree of hypochloraemic alkalosis will be the cause, and this can be corrected by administering acidifying agents, especially ammonium chloride, either regularly or before each injection of diuretic. Since hypopotassaemia is apt to appear in congestive failure, and since mercurials cause a potassium diuresis, there is much to be said for administering potassium salts by mouth to patients receiving these drugs regularly: 2–3 g. a day can safely be given orally, provided renal function is not seriously impaired. Should these measures fail, oedema may be reduced by substituting cation exchange resins for mercurial diuretics. These resins inhibit the absorption of sodium from the gut, and also cause an acidosis. Indeed, diuretics and resins might be effectively alternated over periods of a few weeks.[4] This regime would avoid the dangers both of prolonged resin and of prolonged mercurial diuretic therapy.

The grossly oedematous patient who fails initially to respond to mercurials often presents a formidable therapeutic problem. The electrolyte pattern of the body fluids is usually very abnormal: the blood urea is high, and the sodium and chloride concentrations of the extracellular space are considerably reduced, the chloride usually more than the sodium. Such a patient may be improved by the well-established practice of draining the oedema fluid through multiple punctures in the back of the feet while being nursed in the sitting position; diuretics must be discontinued. However, large amounts of electrolytes may be lost in the fluid drained in this way, and sodium, chloride, and potassium supplements to the diet may be necessary. When the oedema has largely resolved, and the electrolyte pattern and blood urea have returned towards normal again, diuretics may be cautiously begun.

Patients with long-standing congestive heart failure, or acute severe failure, terminally develop irreversible electrolyte disruption: they become severely oedematous, the serum sodium and chloride are markedly reduced (owing to dilution), the blood urea is raised, and all measures fail to avert a fatal outcome. It is often difficult to judge exactly when this state has been reached, but, when repeated readjustments of the therapeutic regime and attempts to correct the electrolyte imbalance produce either an increase in oedema or further depression of the extracellular electrolyte concentration, the heart is usually irreversibly damaged and the prognosis hopeless.

Newman[3] points out that the so-called low-salt syndrome is probably the result of a combination of genuine salt deficiency and salt dilution. Salt deficiency can be due to loss of salt from sweating, diarrhoea, removal of ascitic or oedema fluid by paracentesis, or treatment with mercurial diuretics, combined with a low salt intake. Administration of excess of water without salt causes further dilution, and aggravates the condition. The syndrome differs from hypochloraemic alkalosis in that the deficiency is principally of sodium rather than of chloride, and there is therefore an acidosis rather than an alkalosis. Not infrequently the two conditions may be combined, and hypochloraemic alkalosis may lead to the low-salt syndrome. The treatment of the true salt-

[1] Elkinton, J. R., and Squires, R. D., *Circulation (N.Y.)*, 1951, **4**, 679.
[2] Schroeder, H. A., *J. Amer. med. Ass.*, 1949, **141**, 117.
[3] Newman, D., *N.Y. St. J. of Med.*, 1954, **54**, 3401.
[4] *British Medical Journal*, 1953, **2**, 611.

deficiency syndrome consists in the intravenous administration of small amounts of hypertonic saline, but this may precipitate pulmonary oedema in a patient suffering from hypochloraemic alkalosis and salt dilution. Hypertonic saline is therefore rarely indicated, because true salt deficiency without dilution is a rare condition.

Much can be done to avert the biochemical complications of congestive cardiac failure and the hazards of excessive treatment by keeping them constantly in mind. When possible, facilities for biochemical analysis should be available if patients fail to respond to mercurial diuretics. Administration of these should be stopped until the biochemical abnormalities can be accurately assessed.

IN TORONTO

The paralysis along the quays of Liverpool and Southampton prevented only a few from reaching Toronto for the Joint Annual Meeting of the B.M.A., the Canadian Medical Association, and the Ontario Medical Association. Determined to get to their chosen destination, doctors and their wives gallantly journeyed back by road to their homes and thence to other ports or to airfields. Somehow or other they all got safely to Toronto, where the warmth of Canadian hospitality and the Ontario climate made them speedily forget their ordeal of travel.

A meeting of the British Commonwealth Medical Conference from June 14 to 16 preceded the main meeting, and the delegates from eleven Commonwealth countries met under the chairmanship of Dr. T. C. Routley to discuss such subjects as medical education, rehabilitation, public relations, and the medical care of native populations. It is hoped to publish subsequently an account of this conference, the value of which was much enhanced by a day's visit to the three divisions of the Connaught Medical Research Laboratories under the guidance of the director, Dr. R. D. Defries. The Commonwealth group were entertained throughout last week by the Academy of Medicine of Toronto, the Ontario Medical Association, the executive committee of the Canadian Medical Association, and the Connaught Laboratories. They were also entertained by the Lieutenant Governor of Ontario and Mrs. L. O. Breithaupt in the Parliamentary buildings of Toronto, and by Dr. J. A. MacFarlane, Dean of the Faculty of Medicine, in Hart House, a building in most beautiful surroundings which provides for students the same kind of facilities as do the Unions of Oxford and Cambridge. The foretaste the few had of Canadian hospitality and friendliness had prepared them for the magnificent arrangements that were to unfold themselves.

In the Royal York Hotel on June 20 the long queue of those waiting to register never seemed to diminish in spite of the most efficient system for this necessary operation. Even so, groups of 200 and more were attending the round-table conferences at 9 a.m., and there must have been between 1,500 and 2,000 persons attending the first plenary session on "The Present Status of Chemotherapy of Bacterial Infections," a report of which appears at page 1525 this week. The morning's sessions over, a large company assembled at a luncheon held in honour of Sir Henry Dale, O.M., who was awarded the Medal of Honour of the Canadian Pharmaceutical Manufacturers' Association. Dr. G. F. Strong, President of the Canadian Medical Association, was in the chair, and he was accompanied at the high table by leading representatives of the pharmaceutical industry, of the Medical Exhibitors' Association of Canada, and what Sir Henry Dale subsequently described as a "posse of presidents." Mr. C. H. Wilkins, of Toronto, after giving a comprehensive survey of Sir Henry's career, presented him with a solid gold medal embossed with the figure of the Winged Goddess of Samothrace. After more sessions in the afternoon Monday came to a close with the induction of Dr. T. C. Routley as President of the British Medical Association for 1955–6. His induction as President of the Canadian Medical Association followed on Wednesday. The Presidential Address appears in our opening pages this week.

PRE-WAR DIET IN BRITAIN

Shortly before the outbreak of the second world war Sir John (now Lord) Boyd Orr planned an extensive dietary survey which was intended to provide further evidence on relationship between poverty and malnutrition. This survey was handsomely financed by the Carnegie Trust, and was carried out by a team under Mr. David M. Lubbock: its computors were stationed at the Rowett Research Institute, Aberdeen. Particulars of the amounts of various foodstuffs purchased, and of the money spent on food, were collected from over 1,300 households, comprising nearly 8,000 persons, in 16 areas in England and Scotland. The list of places included small country villages and large towns, with rural or industrial activities. On the outbreak of hostilities the survey was stopped and the team dispersed for war duties. After a lapse of seventeen years, however, Dr. D. Harvey, of the Commonwealth Bureau of Animal Nutrition, has shown commendable perseverance in compiling a comprehensive, if belated, report.[1]

In a preface Lord Woolton commends the work of the survey, and previous observations by Orr, as having guided him in the food policy which assisted so much in preserving the health of the nation during the war. The report is indeed valuable for its detailed evidence of the amounts of food which were being eaten in 1938, before our consumption of the various foodstuffs (and their distribution between different social classes) was altered by the impact of the war and by official policy. In that year, as now, a low expenditure on food implied a low intake of "protective foods" such as meat, fruit, and green vegetables, but not of "energy foods" such as bread and potatoes. On modern standards, however, the evidence for widespread deficiencies of vitamins A

[1] *Family Diet and Health in Pre-War Britain.* Report by the Rowett Research Institute to the Carnegie United Kingdom Trust, 1955, Aberdeen.

and C is not very convincing. For vitamin C the estimate of the daily requirement was admittedly taken very high, and it was only just attained in the wealthiest class. For vitamin A the contributions made by the various foodstuffs were calculated from a table in an unfamiliar Danish textbook. No attempt seems to have been made to separate the highly potent carrots from the rest of "root vegetables, other than potatoes," which are all negligible as sources of vitamin A. Liver is not distinguished from other forms of meat. Few will dispute that in the days before the fortification of margarine the vitamin A intake of the poorer classes at least required anxious consideration. But the evidence included in this report does little towards converting this suspicion into solid historical fact.

MODIFICATIONS OF CORTISONE

Carefully controlled clinical trials[1-3] designed to study the value of cortisone in the treatment of rheumatoid arthritis have failed to show that it has any advantage over aspirin when two strictly comparable groups of patients are compared, the one receiving cortisone and the other aspirin in large doses. Despite some reports to the contrary, describing observations on uncontrolled groups of patients, there is now general acceptance of the view that, at least for something over 90% of patients with rheumatoid arthritis, there is no indication for instituting long-term cortisone treatment, and it clearly offers little in the way of direct help to the mass of sufferers. No decisive data are yet available on whether the same applies to prolonged adrenal stimulation by means of corticotrophin, and in view of the disappointing findings with cortisone this merits further trial: an encouraging report from Dr. J. W. Beattie and Professor S. J. Hartfall appears elsewhere in this issue (p. 1494). In the meantime the recognition that apparently minor changes in the structure of the steroid molecule may profoundly modify the clinical and biochemical effects of these substances has stimulated the chemists' imagination and led to the trial of numbers of such variants. The first successful one was hydrocortisone (Kendall's Compound F), which became available in 1951. Boland[4-5] estimated that hydrocortisone (free alcohol) was 50% more potent milligram for milligram than cortisone acetate or cortisone (free alcohol), although hydrocortisone acetate was less effective than either, and he suggested that hydrocortisone was less likely to cause side-effects such as sodium retention. However, the advantages of hydrocortisone over cortisone have been almost entirely utilized for intra-articular injections.[6-8] The injection of hydrocortisone into soft-tissue lesions is also meeting with some success, and in this issue of the *Journal* we publish a paper by Drs. E. J. Crisp and P. Hume Kendall on its use in periarthritis of the shoulder (p. 1500) and another by Dr. B. G. B. Christie describing the treatment of twenty cases of de Quervain's disease with the local injection of hydrocortisone acetate (p. 1501).

The halogenated derivatives of hydrocortisone have also come in for some attention since animal studies suggested that these have a higher glycogenic activity: 9-alpha-fluoro-hydrocortisone had apparently ten times the activity of cortisone in this respect.[9] Boland and Headley[10] have reported that doses of 3 to 8 mg. per day—less than one-tenth of the equivalent effective dose of cortisone—had a considerable anti-rheumatic effect in patients. Unfortunately the salt- and water-retaining effect was enhanced also,[11] and to apparently a greater extent than its anti-rheumatic action, thus making the substance useless for practical therapy. This steroid was also effective when given by intra-articular injection,[11] but again so potent was its sodium-retaining property that this militated against its practical use. Another variant, hydrocortisone t-butyl-acetate, was, however, found by Hollander and his colleagues[12] to be more effective. Although of no immediate practical consequence, studies such as these did point the way to the possibility of improved clinical results. Against this background recent preliminary reports by Bunim and his colleagues,[13 14] Dordick and Gluck,[15] Gray and Merrick,[16] and others,[17] all from the U.S.A., are of interest. The variant tested apparently differs from cortisone only in the addition of one double bond and is known as metacortandrecin ("metacorten") or prednisone. It is reported to have, dose for dose, five times the initial beneficial effect of cortisone in rheumatoid arthritis and other rheumatic conditions, while electrolyte studies showed its salt-retaining properties to be slight and its effect on diabetes to be comparable to that of cortisone. However, in three of eighteen patients treated[14] a duodenal ulcer developed, and in a fourth case a frank depressive psychosis was precipitated in an unstable subject. These are only preliminary studies, and it remains to be seen whether prednisone can overcome the fundamental difficulties in the way of controlling a disease such as rheumatoid arthritis by means of steroid administration, or whether the difference is largely quantitative rather than qualitative.

STERILIZATION OF ANAESTHETIC APPARATUS

On more than one occasion[1 2] during the last few years doubts have been expressed about the efficacy of methods of sterilizing anaesthetic apparatus as they are carried out in daily practice, and a recent report[3] by W. L. J. McDonald, H. J. Welch, and J. E. Keet does little to dispel them. The authors describe carefully controlled experiments designed to assess the value of

[1] Medical Research Council and Nuffield Foundation, *British Medical Journal*, 1954, **1**, 1223.
[2] —— ibid., 1954, **1**, 233.
[3] —— *Ann. rheum. Dis.*, 1954, **13**, 351.
[4] *British Medical Journal*, 1952, **1**, 559.
[5] *Ann. rheum. Dis.*, 1953, **12**, 125.
[6] Hollander, J. L., *et al.*, *J. Amer. med. Ass.*, 1951, **147**, 1629.
[7] —— *Ann. intern. Med.*, 1953, **39**, 735.
[8] Stevenson, C. R., *et al.*, *Ann. rheum. Dis.*, 1952, **11**, 112.
[9] Borman, A., *et al.*, *Proc. Soc. exp. Biol. (N.Y.)*, 1954, **86**, 570.
[10] *Ann. rheum. Dis.*, 1954, **13**, 291.
[11] Liddle, G. W., *et al.*, *Science*, 1954, **120**, 496.
[12] *Ann. rheum. Dis.*, 1954, **13**, 297.
[13] *J. Amer. med. Ass.*, 1955, **157**, 311.
[14] Bollet, A. J., *et al.*, ibid., 1955, **158**, 459.
[15] Dordick, J. R., and Gluck, E. J., ibid., 1955, **158**, 166.
[16] Gray, J. W., and Merrick, E. Z., *J. Amer. Ger. Soc.*, 1955, **3**, 337.
[17] Margolis, H. M., *et al.*, *J. Amer. med. Ass.*, 1955, **158**, 454.

[1] Bromage, P. R., *British Medical Journal*, 1952, **2**, 1042.
[2] Clausen, R. J., ibid, 1952, **2**, 1206.
[3] McDonald, W. L. J., *et al.*, *Anesthesiology*, 1955, **16**, 206.
[4] Herwick, R. P., and Treweek, D. N., *J. Amer. med. Ass.*, 1933, **100**, 407.
[5] Prenzlau, M. S., and Karp, M., *Anesthesiology*, 1954, **15**, 566.

certain chemical methods of sterilizing endotracheal tubes and face masks. They smeared tubes and masks with sputum containing pathogenic organisms which had been isolated from the respiratory tract, and then, after cleaning and sterilizing the tubes and masks by standard techniques such as are commonly used in hospitals, took cultures from them. In most experiments the organisms were found to have survived. Of the methods used, the only one consistently to produce sterility of the endotracheal tubes was scrubbing the inside and outside of the tubes for one minute each with "PHisoHex solution," a preparation containing hexachlorophene. Unlike antiseptics containing phenol, PHisoHex when used in this way for over six months in clinical practice did not give rise to any mucosal or skin irritation.[4]

It is perhaps a pity that these authors did not include in their survey the practice common in Britain of boiling endotracheal tubes or of immersing them, after washing in running water, in a solution of biniodide of mercury. They dismissed autoclaving as described by M. S. Prenzlau and M. Karp[5] as unsuitable because of its deleterious effect on rubber. So far as boiling is concerned, the life of rubber tubes sterilized in this way is appreciably shortened, even when non-greasy lubricants only are used. However, when tubes have been used on, for example, tuberculous patients, it is essential to make certain of sterility even at the expense of shortening the life of the endotracheal tube or face mask; any risk of cross-infection with tubercle bacilli must be eliminated.

That sterilization of anaesthetic equipment is desirable hardly needs statement. Items like endotracheal tubes come into intimate contact with perhaps highly infected parts of the patient. The need does not seem to be so much for effective methods of sterilization, since many by heat or chemicals are known, as for their proper use. For endotracheal tubes and similar rubber parts the ideal solution to the problem would be disposable units, like the "polymask" oxygen mask, and the infusion sets used in the United States. These would impose no extra strain on a busy operating-theatre staff. Until then the same care should be given to sterilizing anaesthetic equipment as is given to surgical instruments.

POST-MORTEM HOMOGRAFTS

The risk to life associated with extensive burns of the body is twofold. First is the phase of immediate shock; secondly, perhaps fifteen to twenty days later, comes the phase in which the loss of integrity of the skin cover is reflected in general systemic disturbances of great severity, which are aggravated by the ever-imminent risk of bacterial invasion. For the past fifteen years or so attention has been focused chiefly on the problems created by shock. More is now known both of the changes which occur and of the means of combating them, though the basic cause still remains unknown. However, increased knowledge does save the lives of an increasing number of patients, though it cannot be assumed that life is saved until the skin is completely healed again, for not until then is the patient safe.

In many cases either the area of the burn is so great that it leaves insufficient normal skin from which autografts may be taken, or the patient's general state will not permit of the simultaneous preparation of the recipient area and of the cutting of the necessary skin grafts. Nowadays the latter state is perhaps less important, but the former remains as a challenge to surgical skill and ingenuity. To solve the problem it is customary to tide the patient over the danger period by the application of homografts. These can be applied by themselves or in conjunction with autografts derived from such skin as the patient can provide for himself. The use of the homografts is merely a measure whereby time can be borrowed, for the "grafts" themselves will disappear within twelve to fifteen days; but the protection they afford during that period can notably improve the general state of the patient. There is the added advantage that the patient's own donor areas are again available for use at about the time when the homografts have disappeared.

The donors of homografts are often other patients already undergoing grafting. The skin can be stored for some weeks in an ordinary domestic refrigerator and will retain its viability if it is kept moist, sterile, and unfrozen. Other methods such as freeze-drying are under investigation, but it is too early to say whether the disadvantage of the graft's apparently slightly shorter "life" is outweighed by the advantage of its capacity for almost indefinite storage.

J. B. Brown and M. P. Fryer[1] suggest the use of skin derived from post-mortem sources, and affirm that if this skin is taken within a few hours of death it behaves in the same manner as a homograft from a living patient. The usual precautions must be taken to guard against the transmission of diseases, and clearly the consent of relatives must be obtained. Such a procedure could have national advantages. It is not difficult to envisage a state of affairs in which living but burned members of armed forces or even of a civilian population might have need of a greater amount of skin to save their lives than was available either from themselves or from such of their fellow survivors as could be spared to act as donors. The possibility of obtaining skin therefore from the recently dead deserves consideration, though administrative difficulties might be considerable. These could be overcome only by much preliminary public instruction and by much investigation and documentation to ensure the avoidance of any possible cross-contamination. Whether such an elaborate organization could be justified must depend upon the results of much more work by surgeons entrusted with the problems of treating burns, but if their findings are favourable there appears to be no reason why the process of cannibalization should not be taken further than it is to-day. We already borrow one man's blood to save the life of another; we borrow his skin, his bone, and his cornea to restore function to another. Until now it has been mainly the cornea which has been taken after death, but if the present work is substantiated a person who dies may, as Brown and Fryer point out, save the life of another person even after his own death.

[1] Brown, J. B., and Fryer, M. P., *J. Amer. med. Ass.*, 1954, **156**, 1163.

EMERGENCIES IN GENERAL PRACTICE

UTERINE INERTIA

BY

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In recent years there has been a tendency to recognize in disordered uterine action an increasing number of separate and distinct clinical entities. It is perhaps not unnatural that this should be so when it is remembered that writers have described a complete atonia of the whole uterus, body and cervix, or, alternatively, a state of spasm which may affect the upper and lower poles at the same time. Again, an inefficient upper segment may be associated with increased tone in the middle and lower zones and with an associated resistance to dilatation of the cervix. And there are further variations of the types just mentioned.

It is not surprising, therefore, that attempts to arrange these disorders in their respective and appropriate groups have become more comprehensive, and for that very reason perhaps more confusing. The following classification is suggested:

1. *Inertia: Hypotonic (Uterus and Cervix).*

2. *Incoordinate Action (Uterus):* (*a*) hypertonic inertia, (*b*) normotonic inertia, (*c*) asymmetrical contraction, (*d*) constriction-ring dystocia.

3. *Incoordinate Action (Cervix):* cervical achalasia.

Such a division may represent an over-simplification of a highly complex and controversial subject, but there has been a tendency to over-elaborate and to give to minor clinical manifestations undue regard and emphasis, even to the extent of labelling them as quite separate conditions; those less obvious disorders are merely a stage of a more generally accepted form of disordered action. That is why "colicky" uterus and "spurious" labour have been omitted from the classification, for it is thought they are phases of, or at any rate incapable of being separated completely from, hypertonic inertia. Under the term "cervical achalasia" is included primary rigidity of the cervix, in the belief that it may be possible in the majority of cases to differentiate clinically one from the other. Secondary cervical rigidity has been deliberately omitted from the list because it is felt that here the problem is a mechanical difficulty rather than a neuromuscular upset.

Normal Uterine Action in Labour

Several writers using the tokodynamometer, with the receptors placed over the fundus, middle uterine segment, and lower uterine pole, have recorded the relative strength of the uterus at different levels. The resulting charts show a gradient of contractibility from above downwards—sometimes referred to as fundal dominance, gradient of activity, or uterine polarity. There has been much argument in recent years about the role of the cervix in labour. Nixon, Karlson, and Sauter believe that the cervix is able to contract, and the last two maintain that the cervix dilates in labour through contraction of its own muscular tissue; the more synchronous these contractions are with those of the uterine body, the quicker does the cervix dilate. This new conception is hard to accept. It is preferred rather to hold to the old view that the part played by the cervix in normal labour is entirely passive, and recent research gives strong support to this hypothesis. If such were not so, uterine polarity would have little or no place in labour.

Definition and Types of Uterine Inertia

In this article it is not proposed to discuss "secondary" uterine inertia, which may result from mechanical obstruction, and should be referred to as "uterine exhaustion," but rather to concentrate on the so-called "primary" inertia. This latter condition is difficult to define but might be described as a prolonged labour, in the absence of cephalo-pelvic disproportion, where the delay is the result of weak and infrequent or, on the other hand, disordered uterine contractions. It is urged, therefore, that when a lack of advance and slow cervical dilatation are evident at the end of 12–18 hours the patient should at once be labelled "inertia" and thereafter investigated and treated as such.

Three forms of inertia exist: hypotonic inertia, normotonic inertia, and hypertonic inertia. The first and last are the more important and more frequent varieties. Hypotonic inertia is characterized by a loss of tone in both upper and lower segments. It is therefore a true inertia with feeble activity of the uterus as a whole. In the hypertonic form, the commonest inertia, there is an increased tone and resistance to dilatation of the lower uterine pole associated with weak action of the upper segment. This is referred to as reversed polarity, and, although the condition comes within the ambit of inertia, it is more suitably classified as an example of incoordinate uterine action.

Aetiology

The aetiology is uncertain and must include many factors. There is a general consensus of opinion that primigravidae are more often affected than multiparae and that freedom from difficulty in subsequent labours indicates the temporary nature of those conditions as they may affect the uterus or its innervation. Because it is realized that in most cases the frequency and intensity of uterine contractions are influenced profoundly by the pressure of the presenting part on the lower segment, malposition, malpresentation, and deformed or contracted pelvis are said to predispose. It is probable that a lack of normal stimulus to the cervix and pelvic plexus may in such cases affect the upper segment by the nervous route. Indeed, a high presenting part may indicate incomplete lower-segment formation and may be a timely warning of impaired uterine action. Some maintain that the condition is encountered more often in the elderly primigravida, and that advanced age therefore plays a part, or where rupture of the membranes has occurred before or in the early stages of labour. The short and obese patient who shows masculine characteristics is more liable to fall victim to inertia. Extensive damage to the uterine wall, as in accidental haemorrhage, may prevent efficient contraction of the uterine muscle, but fibroids and underdevelopment are not in themselves adequate cause. Hydramnios and multiple pregnancy are said to be quite often associated with inertia, but I believe that this is not so, because the premature and short labours which characterize both conditions do not suggest any loss of tone. The third-stage bleeding which may follow a twin delivery is due not to inertia but rather to the mechanical difficulty in separating and in expelling the larger placenta.

The extent to which hormone activity may provoke or influence these disorders has inevitably excited speculation. Oestrogenic principles circulating during pregnancy are in an inactive state, and this suggests the existence of some mechanism which is protective in so far as the hormone is prevented from sensitizing the uterus prematurely. If such

be true, it may be that some cases of inertia are due to a persistence of this mechanism and any oestrogenic hormone given will be inactivated and rendered useless. Csapo and others have, however, provided a new approach to this subject. They have shown that the contractions of voluntary muscle depend very largely on the presence in the muscle of a fibrous protein complex called actomyosin and of a high-energy substance adenosine triphosphate (A.T.P.). This actomyosin–A.T.P. complex is present in the myometrium just as in striated muscle. It is thought that the main function of certain electrolytes and enzymes is the breakdown of these phosphates. In this way energy is released and restored to the contracted actomyosin, which is able to relax in a charged state ready for another contraction.

Compared with the non-pregnant uterus, the uterus just before labour has a relatively high actomyosin concentration and in labour this is much higher in the upper segment than in the lower. This is as it should be if the theory of uterine polarity be correct; indeed, it may go a long way towards explaining the difference in function of the two uterine poles. It has been shown further that oestrogens are responsible for the development of the biochemical contractile system of the uterus—actomyosin, high-energy phosphates, and the rest—and in pregnant rabbits the hypothetical curve of active oestrogen bears great similarity to that representing actomyosin concentration and A.T.P. activity. Progesterone, too, plays a part in that it modifies the energy-giving part of the contractile system by redistribution of the potassium ion through an alteration in permeability of the cell membrane.

It is believed, however, that fear is one of the most important causes of inertia. The patient has been terrified by the unknown ordeal which lies ahead, and by keeping this fear to herself she may have lived for months in a state of suppressed anxiety. It is probably true that there is nothing more difficult to assess than the mental attitude of the woman to her forthcoming labour, and it is often the woman who is casual and outwardly unperturbed by what lies before her, determined not to give way to her fears or to confess to them, who becomes the victim of inertia.

No one can describe with absolute certainty the nerve supply of the uterus and its function. It is accepted that the uterus, under appropriate conditions, can contract as an isolated organ. It is therefore difficult to understand the functions of its nervous connexions. Few now believe in the presence of an intrinsic nervous plexus, which was formerly thought to co-ordinate the actions of different parts of the uterus. There is, however, a rich supply of sympathetic (adrenergic) nerves which travel via the superior hypogastric plexus (presacral) nerve and the inferior hypogastric plexus. The motor fibres of those nerves appear to be largely inhibitory, in so far that contractions elicited by their stimulation mainly affect the lower segment. It is also said, although some doubt it, that the uterus receives a parasympathetic (cholinergic) supply from the second, third, and fourth sacral nerve roots, and that this also reaches the uterus via the inferior hypogastric plexus and the paracervical ganglia. Stimulation of these nerves is said to cause a contraction of the detrusor muscle of the upper segment.

According to this concept, the parasympathetic brings about evacuation of the uterus, whereas the sympathetic tends to prevent it, good uterine action depending on a balance between the two. It may be that sympathetic stimuli cause an increase in uterine tone while parasympathetic stimulation has the opposite effect. If uterine tone is reduced, then uterine contractions would increase in amplitude and efficiency. If, on the other hand, there is no parasympathetic supply to the uterus, efficiency must depend on a balance between the inherent muscle activity under the control of hormonal factors and the sympathetic nervous system. If the substance of this be true, there is the possibility that fear, acting on the sympathetic, maybe through adrenal stimulation, brings about a "tightening-up" process in the region of the lower segment and circular fibres of the internal os area. Adrenaline *B.P.* consists of adrenaline and noradrenaline, and it has been shown that a solution of adrenaline will, in very low dosage, inhibit uterine action while noradrenaline stimulates it. It is possible that the pattern of uterine activity can be considerably distorted by some upset of balance between the two, and it is suggestive that the adrenaline level in the blood is raised in women showing a severe degree of uterine inertia.

This whole question is a very difficult one. For instance, the patient who is afraid and has a troublesome first labour should have a greater fear and even more difficulty in a subsequent confinement. This rarely happens and shows that fear is not the only factor involved. Again the division of the uterine wall into longitudinal and circular fibres is obviously incomplete when no account is taken of the oblique middle layer, the thickest of all. Likewise the variable response which the uterus gives to stimulation of the sympathetic under different conditions invalidates any general conclusion concerning the function of that part of the autonomic nervous system.

There is one further point. Three years ago Dr. T. L. Adamson and I carried out a clinical investigation into certain problems relating to uterine inertia. This showed, what some writers have denied, that the incidence of primary dysmenorrhoea was higher in the inertia group (28.3%) compared with the control group (16.6%).

Clinical Picture

The clinical picture naturally varies with the type of inertia, but it is true to say that a fairly accurate diagnosis can be made by the bedside of the patient without resorting to the tokodynamometer or other "backroom" method of assessment. The patient with hypotonic inertia has little or no pain, but when pain does occur it is felt mostly in the abdomen and only slightly in the back—in other words, the pain distribution of normal labour. It may be difficult to say definitely that labour has started, and certainty may come only with a very slow cervical dilatation, a "show" or rupture of the membranes. The patient's general condition remains good, there is no distress or tiredness, no elevation of the pulse or temperature, and not enough discomfort to cause the patient worry or any appreciable loss of morale, at any rate in the earlier stages. After 24 hours the bladder and colon may become distended, the result of an associated atonia.

With hypertonic inertia the picture is very different. Here part of the uterine wall is in spasm, and as a result the intrauterine pressure is raised. In normal labour this pressure between first-stage contractions is 5–6 mm. Hg, but where the uterine contractions are colicky the resting pressure may be raised to 15–18 mm. Hg or more. In other words, the interval pressure approaches the level of pain production. Constant pain is therefore one of the main features, this pain being present and becoming aggravated before a contraction is evident and remaining after the contraction has passed off. The contractions are intermittent and infrequent. Backache, which may have been present for several days before labour began, and which persists during labour, denotes a resistance to dilatation of the lower pole and gives the patient more distress than the abdominal discomfort. Cervical dilatation is slow. The desire to "bear down" in the first stage, a feature which is often quite disconcerting, is thought to be due to spasm of the pelvic colon or rectum. Little advance is made, and in time the patient becomes conscious of this. Her morale deteriorates, she begins to worry, she becomes more tense, and the vicious circle is complete. Eventually she becomes exhausted and the pulse and temperature rise.

Maternal and Foetal Risks

Badly chosen and ill-timed operative obstetric procedures —"heroic obstetrics" of which more will be said later— are responsible for severe trauma to the mother's soft tissues. Shock and haemorrhage may follow and have even greater significance in the woman already tired from

prolonged labour and depressed by a lengthy anaesthetic. Too much delay in deciding on the correct method of treatment and too many examinations and manipulations predispose to infection. The increased incidence of post-partum haemorrhage, retained placenta, and manual removal of the placenta must ever be borne in mind.

In prolonged labour there is also the chance of infection of the amniotic sac, with intranatal or neonatal death. Injury or death to the foetus may result from birth trauma or from uterine spasm: as already stated, when the uterine contractions are colicky, the resting intrauterine pressure is raised and is in fact often higher than the blood pressure in the placental sinuses. Such asphyxia may occur even with intact membranes.

Remote Prognosis and Prophylaxis

According to Holmes, about one-third of the women who have experienced uterine inertia deliberately avoid a further pregnancy. It is generally accepted that inertia does not often recur in subsequent labours, and that uterine efficiency improves with each pregnancy. This improvement would seem to depend largely on the degree of cervical dilatation reached in the previous labour. If half dilatation has been attained the probability is that efficient uterine action will be the rule.

Prophylactic treatment includes advice regarding mental and physical relaxation; exercises are not of much avail. Great attention should be paid to inquiring into and discussing any points about which the patient may be anxious. She should be reassured as far as is possible. It is important, too, although difficult to carry out always in hospital practice, that the patient should, during the antenatal period, get to know and trust the doctor who is to manage her confinement.

Treatment

It is of first importance that the patient with inertia should be dealt with in hospital. She should be transferred there if after 12–18 hours of labour she has made little or no advance. It is realized that a patient may have a "stuttering" type of labour for 12 hours or so and then suddenly true labour becomes established and she is soon delivered. Despite that a time limit is required and it is better to err on the safe side. There is no place for the treatment of inertia in the home if hospitalization is possible.

As soon as hospital is reached three things are done: (1) The physical and the mental conditions of the patient are assessed; (2) any mechanical factor such as malposition, disproportion, etc., is confirmed or excluded; and (3) the type of inertia is determined on clinical grounds; the tokodynamometer, if one is available, should take second place to clinical judgment.

It is of primary importance that each case should be considered on its own merits; it is therefore impossible to lay down a hard-and-fast scheme, but whichever type of inertia is present the general rules of any prolonged labour should be observed. Fluids and carbohydrates should be given freely, the bladder and rectum be emptied regularly, the pulse and temperature watched carefully, and every effort made to support morale. The patient should not be left unattended for too long.

Hypotonic Inertia

The following plan of management is recommended:

(1) Allow the patient up during the day.

(2) Sedatives at night may range from a mild barbiturate, such as butobarbitone "soneryl," 3 gr. (0.2 g.), to morphine, ¼ gr. (16 mg.).

(3) Test the urine for acetone after 12 hours and four-hourly thereafter. If the test results are positive, 1,000 to 1,500 ml. of 5–10% glucose should be given intravenously.

(4) Castor oil, 2 oz. (60 ml.), an enema, and a hot bath may be of advantage on the second day.

(5) If labour has been allowed to drag on so long, prophylactic sulphonamide, 1 g. thrice a day, and penicillin, 250,000 units twice a day, may be indicated on the third day, or before that if the membranes rupture early.

(6) When labour advances to a certain stage—half dilatation of the cervix—malposition may be corrected or the membranes may be ruptured with good effect.

(7) There is a small place only for "heroic obstetrics"—for example, cervical incisions or manual dilatation of the cervix with subsequent forceps extraction, when the head is very low in the pelvis.

Two further points require special mention:

(8) If the uterus is hypotonic a pitocin drip infusion may be started at any time (30 drops a minute of a solution made up of 10 units of pitocin per litre of 5% glucose). This is a much safer method of administering pitocin than by injection, where there is not the same control; the infusion can be stopped at any moment and so the risk of maternal and foetal injury is minimized.

(9) The place of caesarean section is an important one. If the patient is an elderly primigravida, if the membranes have been ruptured for 24 hours or more, if the patient has been in labour for 36 hours, if there is evidence of maternal or foetal distress, or if more conservative treatment has failed, section must be given very serious consideration.

Hypertonic Inertia

The same general rules as above obtain here, with the following additions:

(1) The patient is best kept at rest.

(2) Intense medication with morphine, pethidine, or other analgesics is essential. Pethidine, given in a dose of 100 mg. at three to four-hourly intervals up to a maximum of 400 mg. or intravenously (Jeffcoate has given as much as 800 mg. in 24 hours), is best throughout the day, and morphine at night.

(3) Even more stress should be laid on detection and correction of acetonuria.

(4) Labour should not be allowed to proceed so long as to necessitate the administration of sulphonamides or antibiotics.

(5) Here the uterus is already in spasm and the tone high, so a pitocin drip infusion is contraindicated.

Two final points should be stressed:

(6) In the last three years and in specially selected cases, dihydroergotamine has been used. This has a sympathicolytic effect and brings about a striking relaxation of the cervix. It reduces uterine tone without paralysing the uterine musculature and without interfering with normal contractions and rhythm. (The "strong and incessant contraction" described by Moir has not been noted. It is true, however, that as the basal tonus is lowered the amplitude of the contractions is increased.) As already stated, fear produces an overactivity of the sympathetic, with a resulting inhibiting effect on the mechanism of labour, and the use of dihydroergotamine depends on this assumption. The drug has no effect on the inactive uterus, and therefore has no place in hypotonic inertia. It is advised that dihydroergotamine be given when the cervix is 5 to 6 cm. dilated. The dose recommended is 0.25 mg. administered by intramuscular injection. The action of the drug is often seen in about half an hour, but two hours may pass before the maximum effect is appreciated. A similar dose may be repeated with safety in four hours, as the action of the drug wears off within that period of time. Some writers condemn the use of dihydroergotamine.

(7) Caesarean section must again be considered for the indications already described. In hypertonic inertia, however, the morale and general condition of the patient deteriorate more rapidly and section may be demanded therefore at an earlier stage of labour.

Next article on Emergencies in General Practice.—"Acute Retention of Urine," by Mr. Alec W. Badenoch.

British Medical Association, Canadian Medical Association, and Ontario Medical Association

JOINT ANNUAL MEETING, TORONTO, 1955

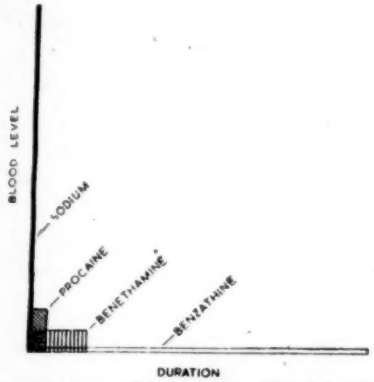
SUMMARY OF PROCEEDINGS

FIRST PLENARY SESSION—"THE PRESENT STATUS OF CHEMOTHERAPY OF BACTERIAL INFECTIONS"

The first of two plenary sessions was held in the Royal York Hotel on Monday morning, June 20, and was opened by Sir JOHN MCNEE, the outgoing President of the B.M.A., who introduced Professor L. P. GARROD (London) as the chairman and opening speaker.

Chemotherapy of Bacterial Infections

After giving a chronological diary of the "new chemotherapy," with the overlap between the sulphonamides and the antibiotics, Professor GARROD pointed out that the new and older sulphonamides had similar antibacterial activities, whereas the various antibiotics were much more selective, except that members of the tetracycline family ("aureomycin," "terramycin," "achromycin") acted very similarly. Amidst the present profusion of chemotherapeutic drugs it was difficult for the clinician to decide which was the best to use. Even penicillin was prescribable in 46 different forms, and the doctor might give injections of penicillin preparations whose effect lasted for periods varying from a few hours to several weeks (see Figure). Professor Garrod was inclined to support Eagle in his preference for longer-acting preparations.



Preparations of Penicillin: Blood levels vary inversely with duration of effect

Indications for Different Antibiotics

The indications for the use of antibiotics in different diseases could be divided into the "immutable" and the "unpredictable." In the former category penicillin was a "safe bet" for scarlet fever, lobar pneumonia, gonorrhoea, and syphilis, and for certain infections derived from animals such as anthrax and actinomycosis; streptomycin was effective in plague and tularaemia, besides tuberculosis; chloramphenicol in typhoid fever; and the tetracyclines or chloramphenicol in typhus and other rickettsial infections. In the unpredictable group were the infections where the organism might or might not be sensitive to the drug of choice, as was the case with staphylococcal infections in a hospital environment; or the physician might have to deal with clinical syndromes caused by a variety of micro-organisms, such as bronchopneumonia, meningitis, urinary tract infections, and wound sepsis. Under these circumstances the wise course was to use at once the most likely drug, after having arranged for a suitable specimen to be bacteriologically examined and tested for antibiotic sensitivity with the disk technique. A result would be available within 24 hours or earlier if an urgent report were needed. The advantages of this procedure were improved therapeutic results and economy in the use of expensive drugs.

Drawbacks and Dangers

It was well to stress the drawbacks and dangers in the indiscriminate use of chemotherapy. The main misuses were in (1) the administration of these drugs to undiagnosed cases or to insusceptible infections, particularly those due to viruses, (2) their prescription for trivial conditions such as colds and catarrhs, and (3) their too frequent use prophylactically. Besides being wasteful misuse of these chemotherapeutic drugs could lead to drug-resistance in the parasite and sensitization in the host. There was also the risk of toxic effects with certain preparations, such as eighth-nerve involvement from prolonged use of streptomycin, aplastic anaemia as a rare complication of prolonged or repeated use of chloramphenicol, or staphylococcal enterocolitis following destruction of the normal flora of the gut by the tetracyclines.

Prophylactic Use

Professor Garrod felt that in surgery chemoprophylaxis might be limited to major chest, abdominal, and cranial operations, extensive injuries, and complicated labours. Penicillin or a similar drug was indicated during dental extractions or tonsillectomy in patients with rheumatic heart disease, and for long-term use in the prophylaxis of rheumatic fever relapses. Antibiotics should not be used in everyday surgery, normal labour, clean wounds, or mouth operations, although in Britain at present the hospital doctor was tempted to a wide prophylactic use of these drugs as a protection against litigation should any untoward incident happen.

Resistant Strains of Bacteria

Dr. T. E. ROY (Toronto) discussed the increasing incidence of antibiotic-resistant strains of bacteria. Many species once susceptible to certain antibiotics now appeared to be largely insensitive to these same drugs. The degree of change varied in different localities, depending on the frequency of use of each antibiotic. The change was seen particularly in staphylococci, which were becoming increasingly resistant to many of the commonly used drugs. In the Hospital for Sick Children, Toronto, among the pathogenic staphylococci isolated during 1954 nearly two-thirds were resistant to penicillin, and about one-third to streptomycin and the tetracyclines, whereas the incidence of strains resistant to chloramphenicol and erythromycin was still very low, partly perhaps because of their relatively infrequent use. Similar trends were apparent in *Bact. coli*, which showed an increasing resistance to streptomycin and the tetracyclines, while *Proteus* and *Ps. pyocyanea* were only occasionally sensitive. However, the situation was not too discouraging. Many important species were remaining uniformly susceptible to most of the drugs to which they were formerly sensitive. These included the β-haemolytic streptococcus, the pneumococcus, the meningococcus, the gonococcus, type B *Haemophilus influenzae*, the spirochaete of syphilis, and others.

The change was particularly evident within hospitals and was considerably less marked in the community at large. For example, in their experience at the Children's Hospital in 1954 about two-thirds of the staphylococci from in-patients and about one-third of the strains from out-patients were penicillin-resistant. The corresponding figures for the tetracyclines were 34% and 8%. There were indications that, as the practice of antibiotic use became stabilized, so did the incidence of resistant strains within and without hospitals.

The mechanisms underlying these changes depended partly on the degree of use of the drugs. Treatment with antibiotics selected resistant mutant cells and allowed them to survive treatment. It also failed to suppress any naturally resistant strains which might be present. The dissemination of these strains followed by way of healthy or convalescent carriers or by other processes of cross-infection.

Fully effective solutions of the problem were still not known. The avoidance of indiscriminate, inadequate, or prolonged courses of treatment, and the use of suitable drugs in combination, might help. The use in rotation of selected antibiotics for prolonged periods of time seemed impracticable and of doubtful value. Better techniques for the control of cross-infection and for dealing with healthy and convalescent carriers were needed.

Choice of Antibiotic

Dr. K. J. R. WIGHTMAN (Toronto) dealt with the various factors that the physician must consider in deciding on the drug of choice in a particular case. So far as the patient was concerned, the severity, character, and accessibility of the infective process, the local and general capacity of the host's tissue to deal with infection, and his previous reactions to antibiotic therapy all required careful evaluation. In severe infections a drug which could safely be given in large doses and could quickly reach effective concentration in the tissues should be used. If the lesion had a poor blood supply, or was accompanied by early necrosis, venous thrombosis, abscess formation, or fluid exudate, a highly diffusible and preferably bactericidal drug was needed, perhaps combined with local chemotherapy. Again, in a malnourished or cachectic patient, in an infant or elderly man, or in the blood dyscrasias, the body defences were poorly equipped to help in overcoming infection, and in some specific fevers an adequate antibody response seemed essential for recovery without relapse.

Apart from factors due to the host, preference should be given to the bactericidal drugs—e.g., penicillin and streptomycin. So far as drug sensitization was concerned, the chance of severe and even fatal reactions to penicillin and streptomycin was sufficiently common to cause alarm, and this complication could best be guarded against by careful questioning of the patient beforehand.

Although in many patients the clinical features of the case might indicate the drug of choice, Dr. Wightman stressed the need for close co-operation with the laboratory for rational and effective chemotherapy. In deciding on a particular drug, besides the sensitivity of the infecting organism, such factors as absorption and diffusibility, mode of action (bactericidal or bacteriostatic), the risk of toxic effects or of superinfection, the ease and flexibility of administration, and even the cost to the patient in cash and discomfort, all had to be considered.

Classification of Antibiotics

He divided the antibiotics into three broad groups according to their antibacterial spectrum. In the first group, particularly active against the Gram-positive bacteria, was penicillin in its various forms. Crystalline penicillin should be used in large doses for relatively inaccessible lesions like those of subacute bacterial endocarditis, procaine penicillin and the various penicillin esters for more prolonged effects. Erythromycin was an alternative drug for penicillin, useful particularly in penicillin-resistant staphylococcal infections, although the staphylococcus could also become erythromycin-resistant following prolonged use. Bacitracin, because of its nephrotoxic effect, should be used only in severe infections. It had a synergistic action with penicillin and was a useful drug for topical use because of the low risk of sensitization.

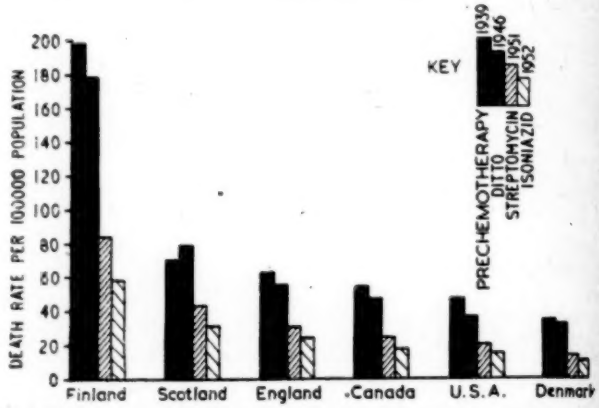
The second group active against Gram-negative organisms included streptomycin and dihydrostreptomycin, of limited applicability because of the early development of drug resistance and the risk of eighth-nerve involvement from prolonged use; neomycin, a nephrotoxic drug to be used systemically only in very severe infections but like bacitracin useful for topical application; and polymyxin, also a toxic drug and active particularly against the pseudomonas family.

In the third group were the broad-spectrum antibiotics, bacteriostatic in action, apt to produce gastro-intestinal upset, and potentially dangerous because of the risks of superinfection in the alimentary tract with such organisms as the staphylococcus, coliform bacilli, and yeasts. This complication was much less likely to happen with chloramphenicol, and, as the risk of blood dyscrasias with this drug had perhaps been exaggerated, he recommended its use in any condition where the indications were clear.

Dr. Wightman also discussed the indications for combined chemotherapy, of which the two most important were to prevent the emergence of drug-resistant variants and to obtain a synergistic action as in the combined use of penicillin and streptomycin in resistant cases of bacterial endocarditis.

Chemotherapy of Tuberculosis

Professor J. W. CROFTON (Edinburgh) reviewed the present procedures in the chemotherapy of tuberculosis. After showing in graphic form the remarkable fall in mortality rates from pulmonary tuberculosis in different countries since 1947, when streptomycin was first used, up to the end of 1952, a year after the introduction of isoniazid (see Figure), Dr. Crofton summarized some of the results



The Figure shows the slight change in mortality for tuberculosis in the eight years 1939–46, the marked drop in the five years following the introduction of streptomycin, and the further drop in the year following the introduction of isoniazid. The mortality figures are from the paper by F. Blanco. (*Bull. Un. int. Tuberc.*, 1954, **24**, 289.)

obtained from the large-scale Medical Research Council trials in Britain and from his personal experience.

With "good chemotherapy" the following claims might be made: (1) Tubercle bacilli could be eliminated from the sputum within six months with the emergence of practically no drug-resistance, and the sputum could be kept negative even in the presence of persistent cavities; (2) most patients could get back to work within 12 to 18 months, although chemotherapy might have to be continued in a modified form in a proportion of these cases. Under these conditions the relapse rate should be very low. "Good chemotherapy" included such combinations as streptomycin 1 g. once daily plus isoniazid 100 mg. twice daily, or streptomycin 1 g. daily plus P.A.S. 5 g. four times daily, for patients under 30 years of age. On this regime older patients were more likely to suffer from giddiness, and for them and indeed for patients of any age an alternative course of treatment would be streptomycin 1 g. twice weekly plus isoniazid 100 mg. twice daily plus P.A.S. 5 g. twice or four times daily. The combination of P.A.S. and isoniazid was recommended for the less severe cases or for the follow-up period. "Risky treatment" Professor Crofton characterized as streptomycin twice weekly with either isoniazid or P.A.S. in full doses daily, since with such treatment resistance to one

or both drugs would develop in a proportion of cases. "Bad treatment" was the use of any of these drugs by itself.

"Salvage treatment" was to be used in patients with tubercle bacilli resistant to one or more of the three main drugs. In such cases the drug to which the organism was still sensitive could be used along with viomycin or oxytetracycline or pyrazinamide. These latter drugs were both more costly and more toxic than those commonly used. Chemotherapy should be continued in most cases for 9 to 12 months, when tubercle bacilli would be eliminated as shown by cultural tests or so reduced in numbers that the patient could deal with the situation. If cavities were present, chemotherapy should be maintained for 9 to 12 months after the last positive sputum or until the cavity appeared to be closed.

With "good chemotherapy" deaths were rare unless the patients were treated very late or death occurred from cor pulmonale or post-operatively. Of 107 patients under his personal care, of whom 31 had advanced, 48 moderate, and 28 minimal phthisis, observed over a period of one to three years, only two deaths occurred. All others became sputum negative and 97% were fit for work.

THE SECTIONS

SECTION OF GENERAL PRACTICE

Monday, June 20

Management of Abortion

Dr. IAN D. GRANT (Glasgow) occupied the chair when Dr. JOHN MANN (Toronto) opened a symposium on "Problems in the Management of Abortion." He said that the incidence of spontaneous abortion was about 10% of all pregnancies. Most of these were due to defective germ plasm, and a simple explanation to this effect should be given to the patient. Hormonal imbalance and general and local maternal disease were of lesser aetiological importance. Various methods of treatment were all likely to be successful, because any vaginal bleeding early in pregnancy was ascribed to threatened abortion, whereas in fact it was often of extrauterine origin. Criminal abortion occurred as often as the spontaneous type, but accounted for almost all the mortality and the great majority of the morbidity attendant on abortion.

Dr. MARY ESSLEMONT (Aberdeen) discussed abortion as seen in an urban general practice in Scotland. She believed that emotional disturbances could sometimes initiate abortion, perhaps by interfering with the hormonal balance. The aetiological importance of retroversion and of fibroids was probably over-stressed. It was sometimes difficult to be sure of the diagnosis of threatened miscarriage, especially if one wished to avoid vaginal examination. In treatment, the psychological effect of close attendance on the patient might be more valuable than any specific form of therapy. It was also difficult to decide which cases of abortion could be treated at home. Social circumstances often made hospitalization necessary in her practice, and about 40% of abortions were transferred to hospital.

Mr. J. R. NICHOLSON-LAILEY (Taunton) dealt with the problem of the recurrent abortion. He emphasized the need for careful history-taking and thorough examination of wife and husband, for if the cause could be found and treated the outlook was good. In particular he stressed the necessity for careful repair of any deep cervical laceration. During pregnancy trauma and excitement should be avoided and the patient should retire to bed at the times of the suppressed menses. Attention to diet and to the early detection of toxaemia were important. If the urinary output of pregnanediol were low the implantation of 120 mg. of progesterone obviated the necessity for repeated injections. He then outlined some problems in the differential diagnosis of abortion, and concluded by advising complete bed-rest and adequate sedation when abortion threatened. In answer to a question, he said that in inevitable abortion he preferred conservative treatment unless there was serious bleeding or infection.

Dr. JOSLYN W. ROGERS (Toronto) detailed the indications for therapeutic abortions performed in a large non-sectarian hospital. He said that gynaecological and obstetrical complications, except carcinoma of the cervix and early but severe toxaemia, rarely necessitated termination of an otherwise normal pregnancy. Psychiatric and neurological conditions presented the greatest difficulty. Modern methods of treatment had diminished the necessity for intervention in patients with cardiac disease or phthisis. Diabetes mellitus was an indication for interference only when nephritis coexisted or when retinitis proliferans was present but without complete loss of vision. He would perform therapeutic abortion for carcinoma of the breast, but there was controversy over the advisability of the operation when rubella complicated the first trimester of pregnancy. In most cases, where a pregnancy was terminated, sterilization was a natural corollary.

TORONTO'S WELCOME

The scientific discussions at the Joint Annual Meeting began on Monday, but for some days beforehand Toronto had been welcoming delegates to the British Commonwealth Medical Conference and members of the B.M.A. as they assembled for the meeting. Toronto doctors and their wives most generously opened their homes to the visitors and over the week-end showed them something of the friendly city and more especially of the meaning of Canadian hospitality. The city's official welcome to the members of the three Associations was on Saturday, June 18, when at a civic reception Mayor Nathan Phillips spoke of the pleasure given to the Corporation of the city of Toronto by the presence of so many distinguished medical visitors. After the reception a concert was given by the Hart House Orchestra, which was conducted by Dr. Boyd Neel, who is now Principal of the Royal Conservatory of Music at Toronto and Dean of the Faculty of Music at the University. On the previous evening Lady Eaton had invited members of the British and Canadian Medical Associations to a reception and supper at Eaton Farm Hall, King, Ontario. The journey out to King was made in motor buses—not without some unexpected excitements—and with a heat-wave on in Toronto Lady Eaton's guests were particularly appreciative of her lovely garden.

On Sunday evening after the official religious service in St. James's Anglican Cathedral and celebration of Solemn Vespers at St. Michael's Cathedral, visiting members and their wives met their Toronto colleagues at numerous informal supper parties.

NEW HONG KONG UNIVERSITY OBSTETRIC DEPARTMENT

NEW MATERNITY HOSPITAL

On June 13 His Excellency, Sir ALEXANDER GRANTHAM, opened the new Tsan Yuk Maternity Hospital which will be the centre for teaching obstetrics to medical students of Hong Kong University.

The University was incorporated under a local University Ordinance in 1911 and opened in 1912. Prior to this the Hong Kong College of Medicine, which owed so much to Sir Patrick Manson and Sir James Cantlie, was responsible for medical education. The founder of the Chinese Republic, Dr. Sun Yat Sen, was one of their students.

The Old Tsan Yuk Hospital

This hospital was opened in 1922 in a densely populated part of the city to provide a maternity service for the Colony and establish a training school for Chinese girls who wished to become midwives. It contained 30 beds, and admissions during the first year were 436. The original

staff consisted of a doctor, matron, two nurses, six student midwives, and five amahs.

Through the munificence of the Rockefeller Foundation in 1926 clinical chairs were established in medicine, surgery, and obstetrics. Professor R. E. Tottenham was appointed to the chair in obstetrics. Realizing the value of the Tsan Yuk Hospital for the training of medical students as well as midwives, he effected a liaison between this hospital and the Department of Obstetrics and Gynaecology of the University. In his report of 1929 he wrote, "To my mind the University Obstetric Department and the Tsan Yuk Hospital are dependent on one another, and their union should lead in time to the development of one of the best midwifery clinics in the Far East." This hope was fulfilled, and the link between the hospital and the university has been maintained by Professor W. C. W. Nixon and later by Professor Gordon King.

In 1934 the hospital, which had hitherto been administered as part of the Chinese Public Dispensary system, became a

Government hospital and the number of beds was increased to 60, and later, after the second world war, to 85. Over the years admissions have increased considerably, and in 1954 the record figure of 7,164 was reached, which is about 10% of the total births in the Colony.

Antenatal clinics were first started in 1929. During the period 1936–41 only 14.5% of mothers received antenatal care, and the remaining 85.5% were "emergency" admissions without antenatal supervision. During the period 1945–54 this position was reversed and 87% of the 50,149 admissions had antenatal care, leaving only 13% as "emergency" admissions. In 1954 as many as 97% of the mothers delivered in the hospital had attended the antenatal clinics.

Further analysis of these periods shows a remarkable reduction in mortality figures. Maternal mortality was 5.02 per 1,000 for the 25,678 deliveries during the period 1927–41, whereas from 1945–54 (47,029 deliveries) the rate dropped to 0.89 per 1,000—a figure which compares very favourably with that found in large maternity hospitals in other parts of the world. Over the years there has also been a steady reduction in perinatal mortality (stillbirths and neonatal deaths). For the year 1954 there was a remarkably low stillbirth rate of only 12.9 per 1,000 and a neonatal death rate of 17.4 per 1,000.

The New Hospital

In 1952 the Hong Kong Jockey Club decided to donate a sum of £250,000 to meet the cost of building a new maternity hospital on a site close to the old hospital. On October 28, 1952, the foundation stone was laid by Her Royal Highness the Duchess of Kent.

The new hospital is an 8-story building containing 200 beds, with accommodation for a resident staff of 7 doctors, a matron, 28 nurses, 72 pupil midwives, and 88 amahs. In addition, residential facilities are provided for final-year medical students during their obstetric clerkship.

The antenatal department is on the ground floor, where there are six examining-rooms with equipment, so that eleven patients can be seen at a time. It is estimated that between 150 and 200 patients will be examined at each session of three hours' duration. Each examining-room has a coloured plaque on the door so that patients who cannot read are guided to the right room by a similar colour on their registration card and on the back of the seats in the waiting-hall. The *x*-ray department, blood bank, laboratory, administrative offices, and a lecture room, with a modern projector, are also on the ground floor.

The wards, named after great figures in British obstetrics, are on the first four floors. There are two wards to each floor, which is self-contained with its labour and delivery rooms. The first and second floors are for normal cases. The third floor is for antenatal cases and for those cases which might need operative delivery such as caesarean section. There is also on this floor a trial labour room, two operating theatres, a nursery with 18 electric incubators for premature babies, and a cooling-off room with six cots. The remaining two floors are the resident quarters for doctors and nursing staff.

The hospital's benefactors can be assured that their investment in this building will be of enduring benefit to countless mothers and children.

NEW YORK CONFERENCE ON NUTRITION IN INFECTIONS

A two-day conference on "Nutrition in Infections," sponsored by the Section of Biology of the New York Academy of Sciences, was held in New York on May 24 and 25 under the chairmanship of Dr. W. A. WRIGHT, medical director of Pfizer Laboratories. Some 200 doctors, veterinarians, and other scientists attended it, a number of them from abroad. The two sessional chairmen were Dr. NORMAN H. JOLLIFFE, director of the New York Health Department's bureau of nutrition, and Dr. HENRY WELCH, director of the antibiotics division of the Food and Drug Administration.

Nutritional Status and Resistance

The conference opened with a review by Dr. S. L. HALPERN (New York Medical College) of the role of nutrition in the prevention and treatment of disease. This was a subject on which there were conflicting views, he said, and critical evaluation of the evidence was overdue. The results of both basic and clinical research in nutrition were difficult to assess because of the many extraneous factors, and discredit followed over-optimism and the unrealistic application of new advances. However, despite these caveats, Dr. Halpern himself came down firmly in favour of the old beliefs. In his view "nutrition therapy" was often of primary importance in the treatment of disease. Indeed, he went even further, claiming that nutrition, "in a non-specific manner, participates in the prophylaxis against most acute infections." Dr. Halpern ended his address by warning against the injudicious application of nutrition therapy. The nature and phase of the illness, the drugs being administered, and the potential toxicity of the nutrient itself and its balance with other nutrients were all factors that must be taken into account.

Dr. FRANCISCO GRANDE (University of Minnesota, from Madrid), after reviewing some interesting Spanish experimental work on lathyrism,* cautioned against too ready acceptance of the dictum that good nutrition confers enhanced resistance to infectious agents. Opinions differed. In one recent textbook Dr. Ancel Keys could be found

*A condition similar to lathyrism had been produced in rats, which are resistant to *Lathyrus sativus* itself, by feeding them on two allied seeds, from one of which the responsible agent had been identified as β-amino-propionitrile. So far as Dr. Grande knew, however, this substance had not been demonstrated in *L. sativus*.

saying that there was no proof of this relationship in man, while elsewhere in the same book Dr. Tisdall held that nutrition was the main factor in determining resistance to infectious agents. The broad problem of infection had been narrowed to one of immunity, or formation of antibodies; unfortunately the problem was far more complex. In Germany, for instance, malnutrition had not been associated with any great increase of infectious diseases despite some minor changes in the immunological responses of individuals.

Local Vitamin Requirements and the Location of Lesions

Dr. M. K. HORWITT (Elgin State Hospital, Illinois) had been engaged in a series of two-year controlled investigations of single nutritional deficiencies in groups of 30 human subjects, but these did not help him to relate the course of most infections with any given nutritional state. Instead he presented what he called an interpretative paper. In nutrition there was a great need for sounder laboratory techniques. For instance, insufficient attention had been paid to the effects of partial as distinct from total deprivation of a nutrient, or the profound catabolic effects of bed-rest alone might have been forgotten in assessing results. Using his own experiences of experimental ariboflavinosis in man as a text, Dr. Horwitt then discussed the possible role of trauma in deciding the location of lesions. Signs of ariboflavinosis could regularly be obtained if daily intake were restricted to below 0.6 mg. riboflavine for five months. The most characteristic lesion in his experience was the scrotal dermatitis. This developed readily and was equally easily cured by the administration of riboflavine. But why was that site particularly affected? The only reasonable explanation seemed to be that the rugose skin of the scrotum was specially liable to friction and abrasion, with consequently a high local rate of epithelial destruction and repair. In the depleted subject the body's riboflavine reserves would be insufficient to meet this specially high demand, so that local metabolism would be interrupted and the lesion develop.

The nutrition of the aged was an ill-understood subject. Recent studies at the Elgin State Hospital suggested that the similarities between the nutritional needs of the young and the old were greater than the differences. But old people might find the quest for food a less satisfying experience, and violate the safety margins for protein and vitamin intake. The loss of muscle mass usual in advanced age was an indication of their decreased nutritional reserve against emergency. This long-term nitrogen loss—and the similar calcium loss—was very reminiscent of what was seen after short periods of bed-rest in younger people, and perhaps the decreased activity of the aged was an important cause.

Dr. WILLIAM W. FRYE (Louisiana State University School of Medicine) discussed host–parasite relationships, particularly as they affect parasites whose adult life is spent in the intestinal tract. Resistance to a parasite might be natural—that is, present at birth or developing with the host's maturity—or acquired after the first exposure. Dr. Frye reviewed experimental work on animals illustrating the effect of various dietary factors in modifying resistance to helminthic infections. This suggested that in omnivorous animals severe protein restriction and deficiencies of vitamins A, B complex, or D lower their resistance. He went on to discuss the question of protozoal infections, particularly *E. histolytica*, again with reference to the influence of diet, and also other factors such as intercurrent infection and strain variation, on susceptibility to infection and its severity. Currently, he and his colleagues were studying the effect of giving dietary supplements and extra vitamins to children with amoebiasis and helminthic infections who were receiving antibiotic therapy.

The next two papers were by veterinary workers. Mr. C. H. HILL (North Carolina College of Agriculture and Engineering) described original work on the effects of vitamins in high dosage on the resistance of chicks to fowl typhoid. In well-controlled tests with 40 birds to each experiment it was shown that high levels of all the known required vitamins increased the chick's resistance. However, the dosages varied considerably. To achieve maximum effect some vitamins, such as vitamin K, had to be increased over the growth requirement many more times than others. With these high dosages supplementary antioxidant was needed, and here diphenyl phenylene was as effective as ascorbic acid. It was also shown that over-supplementation with vitamins could reduce resistance below the maximum. Professor R. W. LUEKE (Michigan State College) read a paper describing the good effects of adding vitamin B complex and antibiotics to the rations of pigs with swine enteritis.

Specific Vitamin Deficiencies and Antibody Formation

Dr. A. E. AXELROD'S (University of Pittsburgh) paper on the relationship of vitamins to antibody formation was of outstanding interest. Although the immune response did not necessarily correlate with clinical resistance to infection, the classic antigen–antibody response was generally thought to play a significant part in this intricate mechanism. He and his colleagues had therefore studied systematically the effects of specific vitamin deficiencies on antibody production, using the albino rat as the experimental animal. Simple inanition was repeatedly shown to have no effect on antibody production, a finding parallel to that observed in field studies in man. Some specific deficiencies (e.g., of thiamine), while causing marked inhibition of the rat's growth, depressed antibody formation only slightly; other deficiencies (e.g., of pteroylglutamic acid) had exactly the reverse effect. Using purified diphtheria toxoid as antigen, they had found that deficiency of pantothenic acid, pyridoxine, biotin, and vitamin D all caused marked impairment of antibody synthesis, but thiamine and vitamin A deficiency had little effect. Further, deficiency of pantothenic acid resulted in a very low anamnestic (booster) response to a second dose of diphtheria toxoid. Although these striking effects on antibody production were obtained with certain specific vitamin deficiencies, serum complement levels were unaffected, a finding that suggested a different mechanism for its biosynthesis. Dr. Axelrod's paper was discussed by Dr. K. S. HETZEL (Dean of the Faculty of Medicine, Adelaide) and by Dr. A. B. STAVITSKY (Western Reserve University, Cleveland). Dr. Stavitsky, who had worked with Axelrod, had applied the latter's observations to tissue culture and homotransplantation experiments with rat spleen cells. Cells from normal immunized animals continued to produce antibody on transfer to animals whose own antibody production had been blocked—for example, by *x* rays, cortisone, or pantothenic-acid deficiency—but failed to do so in normal animals, perhaps owing to the production of antibodies against the foreign cells. Cells from immunized, but pantothenic-acid deficient, animals failed to produce antibody either on culture or on transplantation. Dr. Stavitsky interpreted these findings as providing evidence for the autonomy of the cells so far as antibody production was concerned.

Miscellaneous Studies

Dr. B. M. KAGAN (Michael Reese Hospital, Chicago) described the effects of sterile abscesses on the vitamin A levels of small numbers of albino rats. There was lowering of the serum and liver vitamin A levels, and in some animals an increase in urinary excretion. The results were the same whether turpentine or sweet almond oil was used to induce the abscesses. The liver vitamin A reserves were rapidly restored after oral dosage. The last paper of the day was by Professor JOACHIM KÜHNAU (University of Hamburg), who discussed fluid, electrolyte, and protein changes during infection.

During the second day, under the chairmanship of Dr. HENRY WELCH, there were two reports on small uncontrolled

clinical trials of combined broad-spectrum antibiotic and multiple vitamin preparations. Dr. AARON PRIGOT (Harlem Hospital, New York) had treated 35 severely ill surgical patients and remarked on the absence of side reactions. The other was by Dr. MAX B. MILBERG (Maimonides Hospital, Brooklyn) and Dr. MAX MICHAEL, jun. (State University College of Medicine, New York). They were interested in the gastro-intestinal complications of orally administered broad-spectrum antibiotics, and were trying out "fortified" oxytetracycline and tetracycline in a mixed group of medical conditions.

Among other subjects discussed at the conference were deficiency diseases in the Tropics, diabetes, and the nutritional care of surgical patients.

Recapitulation and Prospect

Dr. HOWARD A. SCHNEIDER (Rockefeller Institute for Medical Research, New York) had been chosen to sum up the proceedings, and he did so with frankness and charm. He confessed he found this a difficult task. He had been rather disappointed by the irrelevance of some of the papers to the real problems involved. There were three fallacies in nutritional research to be guarded against. First, the implicit assumption that the anthropocentric view was correct. Secondly, the view that "supernutrition leads to a happy end." This might not be true, and Dr. Schneider gave examples of work which had shown that vitamin, fat, or protein supplements could exert an adverse effect on the course of infections. Adding things was not necessarily harmless. The last fallacy was the assumption that there is such a thing as general resistance. There was no such thing. The question should be, resistance to what? There was still much to learn, Dr. Schneider concluded, but in order to succeed Nature must be obeyed, not commanded.

The members of the conference were entertained by the New York Academy of Sciences to dinner on the first day, and after it Dr. HANS SELYE gave a most entertaining account, illustrated largely from his personal experience, of some common pitfalls in the interpretation of scientific data. The proceedings of the conference are to be published by the New York Academy of Sciences.

JOINT MEETING OF BRITISH AND FRENCH ORTHOPAEDIC ASSOCIATIONS IN PARIS

The British Orthopaedic Association and the Société Française d'Orthopédie et de Traumatologie held a joint meeting in Paris from May 5 to 7, under the chairmanship of their respective presidents, Professor BRYAN MCFARLAND and Professor P. PADOVANI. The principal subjects discussed were the surgery of the paralysed lower limb and osteochondritis of the hip. This account is limited to a brief report of the papers on tendon transplantation given in the session on the paralysed lower limb and to the discussion on Perthes's disease.

Tendon Transplantation in the Paralysed Leg

Mr. J. M. P. CLARK (Leeds) discussed tendon transposition in the buttock and thigh. The revulsion that had followed the first enthusiasm for the work of Robert Jones and Tubby was now on the wane, he thought. But certain important principles must be realized: it was impossible to replace a completely paralysed muscle; no muscle training would ever alter muscle imbalance; and deformities might recur even after arthrodesis. Tendon transposition was best done to prevent deformity. Transplants needed protection for at least six months after operation.

Replacement of hip abductors was most difficult; the ilio-psoas transplant was satisfactory if a normal gluteus maximus and sartorius were present, but it was a severe operation. In the presence of a good gluteus maximus the backward shifting of the origin of tensor fasciae femoris could help a weak gluteus medius. In adduction deformity tenotomy, neurectomy, and osteotomy all had a place. In preventing recurrence of the deformity he had successfully tried a new procedure in which the adductor origin was detached from the pubis and mobilized with its nerve supply intact, transposed under the rectus femoris, and attached to the ilio-tibial band. In the case of the knee, transplants into the quadriceps could be done to prevent buckling, to allow a calliper to be discarded, or to prevent flexion deformity. They were most effective when the foot was stable, any knee deformity had been corrected, and in the presence of strong hamstrings and at least fair glutei. Semitendinosus and gracilis medially, and biceps laterally, were all used, but semimembranosus must be left intact. Mr. Clark stressed the importance of the normal coupled action of the hamstrings with the knee extensors in the last part of the movement of straightening hip and knee, which therefore made the transplant a good one. The use of sartorius and tensor fasciae femoris had not been satisfactory.

Mr. D. M. BROOKS (London) spoke on the use of tendon transplantation for the prevention of foot deformities. The operations were easy, could be done early, and did no irremediable damage, but unfortunately at least one-third failed in their purpose. It was necessary to know accurately the power of the muscles and which were causing deformity, a difficult matter to assess before the age of 5. It was useless to employ a muscle as a transplant whose automatic phase of function was at variance with that of the recipient; hence the futility of transplanting tibialis anterior to the calf. The essential principles were that full passive correction should be possible, the deforming force must be removed, and the paralysed muscle action must be replaced.

Of forty-nine transplants of the peronei to the calf in cases of calcaneocavus, with or without valgus, over half had been failures, continued Mr. Brooks. Transplanting extensor hallucis longus to the first metatarsal neck had failed in twenty-four out of thirty-nine cases of pronation of the forefoot, and in a similar proportion transposing peronei to the dorsum of the foot failed to improve planovalgus. The most successful group were the equinovarus deformities, in which only nine out of twenty-two failed to show improvement, six of the failures being due to the detachment of the transplant from its new site. In all groups secondary deformity was not uncommon. However, in spite of the many failures, he thought tendon transposition a useful mitigating procedure in carefully selected cases, provided the cause of the original deformity had been eradicated; indeed, it was doubtful if it was ever worth shifting a muscle which was not itself causing the deformity.

Mr. T. T. STAMM (London) described the surgical measures for the relief of paralysis of the intrinsic muscles of the toes. After discussing the Lambrinudi procedure of multiple interphalangeal fusions he proceeded to review the indications for tendon transplantation operations. If there was fixed extension of the metatarso-phalangeal joints multiple tendon transplants of the long flexors of the toes to the extensors was a better operation, but was contraindicated in the presence of much fixed flexion of the proximal interphalangeal joints. The two procedures were complementary and should not be looked on simply as alternatives for any given case. The operation of transplanting the extensor tendons into the metatarsal necks was a poor one, he thought; it was unsound physiologically because the timing of the automatic action of these muscles was wrong for the new function required of them, and in any case the tendons seemed to return as if by magic to their original insertions.

In the subsequent discussion Mr. H. J. SEDDON (London) stressed the need for independent assessment of a surgeon's results from tendon transplants in the foot; the basic idea was good, but fewer cases than imagined were really worth operating on.

Perthes's Disease

Dr. J. LEMOINE opened the session by describing an experimental study by Dr. R. LAGRANGE and himself, largely done at Oxford. While ligation of the anterior circumflex vessels in 2–3-weeks-old rabbits produced only minimal changes, ligation of the round ligament was followed by varying degrees of enlargement of the femoral head, with flattening, increased radiological density, and often some subluxation. Angiograms showed an increased vascularity of the head. The neck of the femur often thickened, and both macroscopically and microscopically the changes were very similar to those seen in Perthes's disease in man.

Professor M. FÈVRE (Paris) reviewed a series of cases of Perthes's disease. Eighty per cent. had occurred in boys. The ages ranged from 4 to 13 years, with a maximum between 4 and 7 years. He had not found trauma or infection elsewhere to be important antecedents, nor pre-existing coxa valga. He divided cases into two groups, depending on whether changes started in the top of the femoral head or around the margins of the epiphysis. The former he considered due to interference with the blood supply from the round ligament, the latter with the supply from the circumflex vessels.

Dr. P. PETIT (Paris) discussed the association of Perthes's disease with congenital dislocation of the hip. He had seen 23 instances of osteochondritis in 87 congenitally dislocated hips, although some had reported an incidence as high as 50%. He had not seen the condition on the normal side. Prognosis was impossible during the first year of life, and in some of the youngest patients there had been complete disappearance of the head. Ten out of eleven cases under the age of 1 year treated by manipulative reduction and fixation in the Lorenz position had been complicated by osteochondritis. Among the possible causes of the condition, he considered important forcible reduction, too powerful traction (the condition being commoner in high dislocations), and above all pressure on the femoral head associated with poor articular contact and torsion of the capsule and its vessels from fixation in the extreme positions. The younger the patient the greater the danger of osteochondritis; the femoral heads of older patients seemed more resistant.

In the discussion Sir REGINALD WATSON-JONES (London) emphasized that Perthes's disease was a disorder from loss of local blood supply. Rest in bed for two or three years could prevent deformation of the femoral head, but one had to wait at least 20 years in order to know whether later degenerative arthritis had in fact been avoided. Still, three years' bed-rest in childhood was a small price to pay to avoid the 50 years of later disability which otherwise followed Perthes's disease with such certainty.

Professor J. TRUETA (Oxford), after illustrating the histological and vascular changes to be seen in experimental osteochondritis in the rabbit, proceeded to describe the development of the blood supply to the femoral head in man. At the age of 18 months none was provided via the round ligament; almost all came from the outer side. By the age of 4, vessels could first be seen entering the head from the round ligament, but only after fusion of the capital epiphysis did these vessels anastomose with the major supply from the outer side. After the age of 16 the anastomosis was adequate and the danger of Perthes's disease past. It had been shown by arteriograms that extreme positions of the hip obstructed the circulation to the femoral head.

Mr. A. H. C. RATLIFF (Edinburgh) gave the results of a late follow-up on 49 cases of Perthes's disease, followed for an average period of 17 years. Apart from a few who received no treatment, all had been treated by frame fixation. Three-quarters of them were fully active and free from pain, although only 38% had good *x*-ray appearances. Of the nine untreated cases only one had a good hip. The most important factor affecting the prognosis was the state of ossification of the head—the younger the child, the better the prognosis. A good immediate result was likely to be maintained for at least 25 years, even though half of such cases had an unsatisfactory *x*-ray appearance.

Correspondence

Because of the present high cost of producing the Journal, and the great pressure on our space, correspondents are asked to keep their letters short.

The Changing Face of Medicine

SIR,—The publication of two articles, by Mr. C. Kennedy and Dr. C. P. D. Grant (*Journal*, April 30, pp. 1045 and 1049), has drawn attention to an uneasiness and cleavage in our profession which merits more discussion.

In our area we have a scheme whereby students in their final year are appointed to practitioners for a short time to observe practice. Whatever benefit it may confer on the student, it does provide the general practitioner with some contact with the modern student and an insight into his activities. One is impressed by the intensity of his course, with his remarkable knowledge of abstruse theories that seem unimportant to us, and, most of all, with a sense of relief that we are not beginning our medical career. Is there not a danger that the intense academic course will leave the student no time to relax or to engage in social and cultural activities? Are we tending to produce a doctor stuffed full of theories but unfitted for his task because he has been trained to deal with disease as distinct from human beings?

As a G.P. one is diffident about criticizing the appointment of full-time professors and teachers, but it is difficult to see how a teacher completely divorced from clinical medicine outside the hospital is of necessity the best teacher of medicine. G.P.s have been interested spectators of the merit awards, and I am sure their sympathies are with the hard-working conscientious clinicians who apparently are passed over for the "ready pens." Might we suggest that the committees who sit in diabolical secrecy might take note of the out-patient lists of consultants? The popularity of the latter is based on the service he provides for practitioner and patient—as good an assessment of merit as any, in my opinion. Is there any good reason why professors of medicine and surgery should be debarred from private practice? I suggest these points are well worthy of consideration, as they would benefit consultant, practitioner, student, and patient.

The increasing problem of medical litigation has been well set out by Mr. Kennedy. I feel strongly that the control of the doctor–patient relationship is to a great extent in the hands of the doctor himself. All that has been said and written about the teaching and training of the undergraduate has a direct bearing on this relationship. Having a limited experience on disciplinary committees of the executive council, I have been impressed with the numbers of cases that need never have come to committee hearing if the doctor concerned had exercised control of his temper and ordinary tact. I say this fully aware that it is only by the grace of God that I have escaped sitting in the defendant's seat, and also conscious of the great injustice to doctors when confronted by a malicious patient aided by free legal aid, but I am convinced that never was ethical conduct of medicine in the true Hippocratic tradition more necessary than it is to-day.

The G.P. perhaps hears criticism of hospital attention from his patients, and I have no doubt hospitals could say the same thing about G.P.s. But, here again, the divorce between hospital and general practice is almost complete, and most of the difficulties are minor and quite capable of being resolved by ordinary good ethical relationship between the doctors concerned. In my area we have a discussion group of neighbouring practitioners which meets monthly. We have tried in a small way to improve the hospital–G.P. relationship by inviting teachers from the medical schools to spend an informal evening with us. Perhaps we flatter ourselves, but it did seem that the enjoyment was mutual, and one of our full-time professors said he was delighted to have the only opportunity afforded him of meeting and getting to know practitioners in his area.

A word of praise for the stimulating article "Youth Looks at Medicine." The writer obviously accepted general practice as a challenge, and eventually found it absorbingly interesting and worth while in spite of the Welfare State. He is perhaps fortunate

in that he has had to make less adjustment to his obstetrical activities than the middle-aged practitioner. The facility with which maternal blood loss can be restored in hospital has profoundly affected the conduct of domiciliary midwifery, and we have been grateful for the clear-cut advice from consultants on what they consider to be the safe limits of domiciliary obstetrical procedure and instrumentation. While time has in no way dimmed my admiration for the skill and judgment of the G.P.s who introduced me to domiciliary midwifery, I have no hesitation in accepting the limits laid down by eminent obstetricians. An attempt is being made in our area to harmonize the relationship between local authority and practitioner. I believe that the service is capable of great improvement if the local authority is prepared to encourage practitioners in domiciliary midwifery and if the practitioner is prepared to accept the local authority's statutory commitments in the service.

I am ever grateful to the B.M.A. for affording me an opportunity of listening to other medical opinion. The penalty for expressing opinion in local B.M.A. sessions is to be stuck on various committees. Committee-sitting is time-consuming, occasionally boring, but seldom time-wasting. The committee-sitter has ample opportunity of studying lay reaction to his own profession, and he must always be impressed by the ability and almost superhuman tact and diplomacy exercised by these oft-maligned permanent Civil Servants of medical administration. I mention these outside activities because I feel that some of our difficulties are self-produced. Considerable space has been devoted in the *Journal* to the difficulties of the intermediate hospital groups. This problem must command general sympathy, but I think that these groups would command much more sympathy and support if they showed more enthusiasm in attending B.M.A. meetings, and more willingness to take part in the routine work of Divisions which affects the conduct of medicine as a whole.

One other factor in the doctor–patient relationship that we cannot ignore is the attitude of the Press. It is irritating to note our misdemeanours in the headlines, but it is the fact that "wrongdoers" are a minority that gives them news value. Our standards and ethics of medicine would perhaps get a better press if we were slightly less aloof. The public relations department of the B.M.A. has done much useful work, but half of this is wasted if the periphery does not avail itself of the advice freely given, and in any case medical news in the lay press must always be a challenge to our conduct and practice of medicine.

In concluding these random reflections of a middle-aged practitioner, I hope to have made some small contribution to the solution of difficulties.—I am, etc.,

Sheffield 6. ANDREW STEPHEN.

SIR,—During the past few weeks your correspondence columns have contained various letters criticizing general practice from various aspects. Most of them have been from the younger or recently qualified practitioner, who would appear to have become rather embittered as he experiences the difficulties of obtaining the practice of his choice. Others have criticized general practice in more detail, and would appear to be dispirited as they experience the disparaging conditions under which general practice is sometimes conducted. I am sure that there are still remaining some practices which do show some of the happier features of general practice.

I do not claim that my practice is quite the *beau idéal*, but I do think that I am one of the few fortunate ones who are practising medicine under conditions as good as they are ever likely to be. Mine is a single-handed practice which leaves me some leisure for social and other activities. Other practitioners, who have the time, have the opportunities for anaesthetics, tonsils, or other specialties. The practice is, needless to say, situated on the south-west coast and in a seaside resort of some 18,000 people. The cottage hospital, in which all the practitioners in the district participate, has some 50 beds, including private and amenity beds, a children's ward, a first-class *x*-ray department, physiotherapy department, and a casualty but no out-patients department. Each of us has the care of our own patients, and we diagnose and treat according to a standard which is comparatively high. The major surgery is performed by visiting surgeons, but some of the surgery is done amongst ourselves.

We have a first-class pathological service, and every modern investigation is available, from simple haemoglobin estimations to pathological investigations such as electrophoretic separation of serum proteins. First-class physicians, surgeons, neurologists, and psychologists, etc., are available for domiciliary consultations or consultations at our hospital. We are fortunate in the hospital in that it has the right number of beds for the district it serves, and it acts as a pleasing diversion for the consultant who cares to hold a session here. Again, it is fortunate in that we have no beds available locally for midwifery cases, and this has induced a very high standard of domiciliary midwifery. Here it is standard to have the W.R., Kahn, haemoglobin and full count, rhesus, and blood group performed in most pregnancies. Most of my midwifery cases are *x*-rayed at the 36th week, and an excellent midwifery service is helped by the co-operation of the district nurses. Rarely is emergency aid required under these conditions, and it remains a point of interest that very few mothers ask for or require hospital maternity care. We are able under these conditions, when further advice is needed, to refer the patients to the particular consultant at the county hospital complete with the *x*-ray films and any other pathological report likely to be needed.

These conditions help materially in the answer to that difficult question which, indeed, can be very personal: "Could anything more have been done?" This, I think, is competitive medicine working satisfactorily within the National Health Service. The purpose of this letter is to point out that there exist practices where keen, interesting clinical medicine still flourishes, and to stimulate the idea that some of these conditions could be encouraged in the more highly industrialized parts of the country.—I am, etc.,

Exmouth. PHILIP WADE.

Prevention of Stasis in Trauma of the Ankle Joint

SIR,—Probably the most common immediate treatment for incomplete tears of the fibular collateral ligaments, where bone injury has been excluded, is the application of a cold compress, with or without the addition of some type of supportive strapping. When treating this type of injury among professional footballers I have found it most difficult, if not impossible, to strike a happy balance between tolerability and efficiency. Either the strapping is too tight to bear, particularly when the patient retires to bed, or it is too slack to perform its functions of support and the prevention of oedema. Besides being the cause of a large proportion of the discomfort felt by the patient, it is obvious that oedema about the site of the injury must considerably retard the rate of healing. While it is widely recognized that massage and elevation can disperse the swelling, only too soon after the foot is returned to its normal dependent position the oedema also returns.

It was in an attempt to find some method of increasing the speed of recovery of footballers suffering from this, probably their most common occupational injury, that, with the encouragement of Dr. E. J. Pike, the Portsmouth Football Club's medical officer, I experimented with a latex sponge rubber pad incorporated inside an elastic adhesive strapping. This, I thought, would exert compression to the sulci around the external malleolus, and perhaps also have a mildly beneficial auto-massage effect whenever the patient moved his foot. The results have exceeded my expectations. For example, a simple tear of the anterior talofibular ligament treated in this manner (details of which follow) shows no oedema at all when the strapping is removed the following day. Sharply delineated by the borders of the pad, however, is a variable but generally large

ecchymosis. The actual site of the tear is naturally tender on palpation, but below the area covered by the sponge pad there is no oedema.

Should there be a delay of, say, 24 hours before the patient is seen, and during which time the ankle has swollen to the recognized proportions, this type of compression support has precisely the same effect—namely, that within a further 24 hours a large area of ecchymosis is apparent

FIG. 1

FIG. 2

FIG. 1.—Latex pad in position. Edges other than those adjacent to fibula should be bevelled. FIG. 2.—With strapping applied.

and the oedema has disappeared. Consequently, not having to compete with a distended ankle, subsequent treatment to the partly torn ligament is quicker and much more effective. In addition, the possible or imagined assistance of the auto-massage effect occasioned by the tightening and relaxing of the supportive strapping on the sponge pad when the patient walks or moves his foot seems to act beneficially in hastening the process of healing.

In practice this method has the distinct advantage of being both comfortable and effective when applied. After the support has been in position for 9 to 12 days it can be removed and dispensed with. Generally the patient is then able to perform all activities other than the most strenuous. The more severe cases may demand a further period of support, but the majority will require very little, if any, further treatment to ensure their complete rehabilitation.—I am, etc.,

Southsea. S. P. BARNARD.

Chronic Appendicitis

SIR,—I must comment on the letter of your correspondent Dr. W. Silber (*Journal*, May 28, p. 1341) when he supports the contention that "the clinical and pathological correlation of chronic appendicitis is still far from satisfactory." If the clinical investigation of the case has included a careful and sufficient *x*-ray examination then there should be no doubt at all about the normality or abnormality of an appendix. By a careful and sufficient *x*-ray examination I mean either a barium meal (or a caecal meal) followed through for at least 48 hours, or a barium enema with at least a picture taken on the following day, if not also on the second day. Either of these investigations will show the presence or absence of one or more of the following in connexion with the appendix: (1) Relative stasis, (2) segmentation, (3) inequality of the width of the lumen, (4) complete or partial fixation, (5) an irregularly bulbous end, (6) kinking, (7) definite non-filling, (8) tenderness on palpating over the structure. I maintain that the *experienced* radiologist will be able to give a correct diagnosis in practically 100% of cases with the help of the above information.

The reason why hospital investigation of the appendix is so often unsatisfactory is that, through lack of time, a 48-hour film is seldom taken in the case of a barium meal and a 24-hour film is seldom taken in the case of a barium enema. Also, in those cases where the appendix has not been visualized in a barium meal investigation, it is not supplemented sufficiently often by performing a barium enema investigation and vice versa. In conclusion, I am convinced, from long personal experience, that a careful and sufficient *x*-ray investigation will always help the clinician to decide about the state of health of an appendix.—I am, etc.,

London, W.1. ISAAC EBAN.

Gonorrhoea Statistics

SIR,—As Chairman of the British Co-operative Clinical Group set up by the Medical Society for the Study of Venereal Diseases to obtain statistical information relating to all aspects of the venereal diseases in this country, I should like to place on record my disagreement with Drs. Gerald H. Knight and W. Fowler (*Journal*, June 11, p. 1430), who regard the study of the epidemiology of gonorrhoea as a relatively unimportant matter. The fact that, despite the excellent remedies available, the incidence of gonorrhoea is not falling in this and other countries is a very important matter for which the explanation is not apparent. Any investigation into this problem must include a study of the epidemiological factors concerned, and that is what the Co-operative Clinical Group had in mind in circulating a pro-forma to those in charge of V.D. clinics.

The problems enumerated by Drs. Knight and Fowler are all very important ones, but none of them seem to lend themselves to collective investigation of the type which the Group can undertake. The Medical Society for the Study of Venereal Diseases exists for the study and discussion of all these problems and holds meetings frequently. As President of that Society I can say that we should welcome more support from, and more frequent attendance of, our colleagues in Birmingham.—I am, etc.,

London, E.1. A. J. KING.

Cyst Formation Following Hernia Repair

SIR,—With considerable interest I read the article by Mr. A. G. Rutter entitled "Cyst Formation Seven Years After a Cutis Graft Repair of Hernia" (*Journal*, April 16, p. 951). Mr. Rutter remarks that experimental work by Zimches[1] showed that a piece of skin inserted free into muscle tissue tends to curl up into a U shape and regularly to form an inclusion cyst. May I add that just half a century ago I proved this fact by experiments and histological work ?[2]—I am, etc.,

Budapest, Hungary. JOSEPH GUSZMAN.

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Intramuscular Chloroquine

SIR,—Dr. Abdul Wahab Ariff's letter (*Journal*, May 14, p. 1218) and the increasing use of chloroquine by the parenteral route prompt me to place on record what I believe to be the first recorded fatality due to overdosage by chloroquine.

In April this year I performed a necropsy on a male Caucasian child, aged 1¼ years, weight 10 kg., who had died following the inadvertent injection of two ampoules of "resorchin" solution (0.3 g. chloroquine base) by the intramuscular route. The history and clinical details made available to me are as follows. The patient, who had had an attack of malaria about 12 months previously, was admitted to an out-station hospital on the evening of April 11, 1955, with a temperature of 103° F. (39.4° C.), slight cough, no diarrhoea, no convulsions. The child had been given two tablets of resorchin the previous evening, which he had immediately vomited. A second medication of one tablet of resorchin given on the morning prior to admission had also been vomited. Clinical examination showed the child to be in good general condition with no abnormal physical signs. The next day the temperature was 100° F. (37.8° C.), W.B.C. 6,000, Hb 75% (Sahli). Scanty malarial parasites in a thick blood film. No albumin in the urine. An intragluteal injection of two ampoules of resorchin was given that evening. About four minutes later the patient momentarily rolled his eyes and moved the right arm in a strange way and then appeared normal and was laughing and eating. The rolling of the eyes was repeated two or three times. Five minutes later the child suddenly collapsed, was pale, deeply unconscious, respiration irregular, pulse rapid and

feeble. A few seconds later respiration ceased and in spite of artificial respiration the child died. A necropsy was performed 40 hours later. The only abnormal findings were a little vomitus in the trachea and bronchi and slight splenic enlargement. Histologically the lung tissue showed moderate congestion and no malarial parasites were demonstrated in the brain.

Chloroquine by the parenteral route is known to produce a fall in blood pressure, and presumably the high dosage in this case, four times the recommended dose, caused a pronounced hypotensive attack. It is essential to give this drug on the basis of 5 mg./kg. of body weight, at which dosage it is a safe and most effective antimalarial.—I am, etc.,

Kumasi-Ashanti. F. C. HARRIS.

Labelling the Container

SIR,—I wholeheartedly support Dr. H. Ucko's plea (*Journal*, June 4, p. 1392) for the labelling of bottles. In consulting-rooms and clinics bottles are clearly labelled, but when dispensed for home use the bottle is labelled "the drops" or "the mixture." Patients are often advised to use two drugs—for example, atropine and sulphacetamide—at the same time, one of which is to be used, say, once a day and the other twice. Both solutions are colourless and mistakes can and do occur. In writing the prescription the direction "Label bottle with name of drug" may be given and it is carried out sometimes.

I have previously made the plea for labelling,[1] but the matter was not pursued as I had hoped.—I am, etc.,

Liverpool, 1. A. MCKIE REID.

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Measles

SIR,—Dr. J. F. Lund's letter (*Journal*, May 21, p. 1279) prompted me to review the incidence of complications in measles in our practice. We do not use sulphonamides or penicillin prophylactically. We merely prescribe aspirin gargle or some other sedative. But at the first suggestion of any complication—that is, pain in the ear or chest or any localizing physical signs in the chest—the patient is put on a full course of penicillin or sulphonamide.

My partner and I have notified 148 cases of true measles in the present epidemic, and, using the above criteria, we have not had to give any antibiotics to more than 10 patients, and in every case the single suspected complication has cleared immediately and the course of the measles has been unaffected. It would seem to us that careful observation by the medical attendant, with timely intervention, is called for rather than the routine use of antibiotics.—I am, etc.,

Enfield, Middlesex. H. R. SHEPHERD.

SIR,—The use of antibiotics in measles obviously depends upon how serious we believe the disease to be and how probable the complications. I was brought up to regard it as a severe illness which was frequently followed by otitis media and sometimes by bronchopneumonia. Nor have I ever read anything to contradict this. But I am bound to say my 35 years of general practice have not confirmed these gloomy views. I cannot from my own experience regard the complications of measles as either frequent or serious. Perhaps I have been lucky. I have only had one death from measles bronchopneumonia—about 25 years ago in a mongol aged 2 years. In 1932 I attended 33 measles boys at a preparatory school; one had a recurrence of an old otitis media, but none of the others had complications. That was before the sulphonamides.

Is measles worse in infancy, childhood, or adult life? The question would be answered without hesitation by most doctors. I have known more than one mother catch measles from her children, and in every case she seemed to me to have it worse. Whether adults really suffer more than children one cannot say, but certainly they make very much more fuss. I have seen measles in an infant of one month, and it was so mild that I should not have diagnosed it had not three other children in the family been down with it.

Do people really get measles twice? The difficulty is one only has the patient's word for it. The present attack is measles, you are quite certain about that, but you did not see the previous illness. I have always kept notes, and since the Health Service started I have tried to record every single consultation and visit on the medical record card.

In November, 1948, I paid three visits to an only child, A, aged 1, with measles. Brother and sister, X and Y, were born in 1949 and 1950. On March 11, 1952, A developed measles again and on March 21 and 22 X and Y came out with it too. With my note of A's previous attack I went most carefully into all these cases. There could be no doubt about A's second attack, but what about his first? I subsequently discovered that only three other cases had been notified in November and December, 1948, none of them within two miles of my case. Further, on June 3, 1953, X and Y went down with rubella, but A did not get it. Was A's first "measles" really rubella? I did not think so at the time, and I have seen a lot of cases. To sum up: in 35 years I have documentary evidence of only one patient who I myself have seen twice with measles, and on re-examination of the evidence I cannot ask you, Sir, to accept it.

Ought one to attempt to isolate measles children (a pretty hopeless task in most houses), and should one be careful to keep children away from infection? Is quarantine worth while? I have not forgotten what I was taught, but my actual experience has not borne it out. Is it worth attenuating measles with convalescent serum? I was once asked by a consultant to do this for his son of 13; he then went off to London and left me to face the complaints of the boy and his mother. After the attack I had to collect 13 oz. (368 ml.) of blood from the boy to make more serum—a good way of starting convalescence! I have not done that any more. Is measles a serious disease in large English country towns at the present time? I cannot say that it is. "A bad cold plus a rash" is what I tell inquisitive patients, and we all know the rash does not matter.

Sir, I apologize for my heterodox opinions, but, let the statisticians say what they will, I suggest that one's views should be based upon observation rather than authority.—I am, etc.,

Norwich. FREWEN MOOR.

SIR,—I have recently had the experience of seeing two children of the same family have measles twice with an interval of about 14 days between attacks.

There has been a general outbreak of measles in the village. The children concerned share a bedroom. The boy, aged 5, fell sick on May 18. He was a contact from the first case in the village, who was in the same form. I saw him on May 21 and diagnosed measles (cough, running eyes, and Koplik spots). The course of the disease was normal, though he only developed a very slight rash. On May 27, after two or three days up, he again returned to bed with malaise and cough and on May 31 the rash came out in full. Since then his convalescence has been slow but steady. The sister, aged 3, developed her first attack on May 26 and was up and about by June 5. On June 12 a second typical attack developed.

I am satisfied that none of the attacks could have been anything but true measles—certainly neither german measles nor scarlet fever. If the sister had not developed a second attack I should have suspected that I had made a mistake over the boy's first attack.—I am, etc.,

Freshwater, I.W. P. A. KNILL JONES.

Neon Lighting in Hospitals

SIR,—Though in his letter (*Journal*, March 12, p. 666) Dr. William B. Bacon may have been mistaken in referring to fluorescent lighting as neon lighting, I readily endorse his poor opinion of it. With regard to the letter of Mr. C. F. Share (*Journal*, April 30, p. 1093), until recently I was working in a new twin theatre unit in the U.K. which was opened only last summer, and the design of which must have been the subject of close scrutiny by the architects of both the Ministry of Health and the metropolitan regional board concerned. The expenditure on its construction and equipment was lavish to an extreme degree. No daylight was

permitted in the operating theatres because of the alleged loss of heat through glass windows; the floor and lower half of the walls were lined with green terrazzo, and the ceiling and upper part of the walls were painted green. The only lighting in the actual theatre, apart from the central operating light, was provided by fluorescent tubes in the ceiling cornices, and the result was disastrous, being a worry to the anaesthetist and a danger to the patient. How much of this colour distortion could be attributed to reflection from the ceiling and walls, or how much was due to the colour of light from the fluorescent tubes, I could not be certain, but, judging from the position in the anaesthetic rooms, where a window was provided, I would lay the blame on both factors.

We have no need to simulate daylight over its whole colour range, but we are interested primarily in the red-pink part of the spectrum, and I have yet to be shown that for this an incandescent light can be improved upon. Could a lighting engineer corroborate this? We do need more direct and precise information and not second-hand administrative opinions.—I am, etc.,

Ibadan, Nigeria. M. W. GLOSSOP.

Anterior Tibial Syndrome Following Arterial Embolism

SIR,—In his interesting article Dr. D. C. Watson (*Journal*, June 11, p. 1412) describes two cases of the anterior tibial syndrome following arterial embolism.

A similar case occurred some months ago in a middle-aged man who had suffered an acute myocardial infarct a few days previously. He had experienced severe pain in the front of the right leg. On admission to hospital he had a patch of icy cold and pallid skin overlying the anterior tibial compartment. The ankle pulses could not be felt, and dorsiflexion of the foot was impossible. He was treated with anticoagulants and also intra-arterial tolazoline. This was noted to produce a diffuse flush to the limb, but more particularly to the area of skin overlying the anterior tibial muscles. This area eventually became persistently flushed and eventually an area of demarcation formed, with eventual sloughing of the whole of the overlying skin. It was considered that an embolus from an endomural clot in the heart had been responsible for the entire damage, but the vasodilator may have caused excessive swelling in the anterior tibial compartment, and contributed to the local necrosis. The patient ultimately succumbed to another acute myocardial infarct.—I am, etc.,

Dewsbury, Yorks. GODFREY B. TAIT.

B Vitamins in Toxic States

SIR,—I should be grateful if you would allow me to comment upon your annotation (*Journal*, June 11, p. 1421). In spite of the obvious advantage of applying a polyvalent concept to the cause of disease, Pasteur's idea of a "single aetiological agent" still largely dominates our thinking in medicine, although single causative factors have failed to explain fully even the aetiology of microbial diseases. Thus you reason that actual, or threatened, deficiency states form the only theoretically valid indication for vitamins of the B complex to be applied. Following this trend of thought you consider it unlikely that true deficiencies could arise in acute toxic states, as only prolonged deprivation can produce vitamin B deficiencies. In support of this view you quote the well-known observation that it takes several years before vitamin B_{12} deficiency becomes manifest after total gastrectomy. But Mollin and Ross[1] have shown that in patients suffering from pernicious anaemia the serum vitamin B_{12} levels may be below normal for at least 1 to 2 years before a definitely abnormal blood picture can be found. As the tissues of a healthy adult may contain 1,000–2,000 micrograms of vitamin B_{12},[2] during the latent period between total gastrectomy and clinical manifestations of vitamin B_{12} deficiency these reserves, mainly from the liver, will be utilized. Indeed, Pitney and Beard[3] showed that, whilst the serum levels of vitamin B_{12} became subnormal only between 8–16 months after total gastrectomy, it is wise to assume a state of vitamin B_{12} deficiency from the day of total gastrectomy.

I find also some difficulty in accepting your presentation of the use of B vitamins in liver diseases, though I am in agreement with you that no definite relation has been found as yet between liver disease and B vitamins. I may perhaps recall the manifold functions of the liver cell in storing glycogen, proteins, and also vitamins; as it happened, medical experience invoked glucose and protein administration in turn for the treatment of liver diseases during the past few decades—perhaps with little scientific justification. It is also probable that the success claimed by Ralli *et al.*[4] in severe liver cirrhosis with ascites after intravenous administration of large doses of potent liver extracts was due to its high vitamin B_{12} content, which enhanced the regeneration of the still intact liver cells. Even before Latner's publication[5] I—and probably others—found B vitamins intravenously administered useful in such a desperate condition like acute hepatic failure. As to your remark on Reynell's[6] results, he gave B vitamins not intravenously but by mouth and in experimental liver failure in rats. Moreover, he very cautiously commented on the extensive metabolic effects of liver injury. Similarly both Colwell[7] and Campbell and Pruitt[8] found in infective hepatitis a more rapid return to normal appetite after vitamin B_{12} administration. As the therapy of infective hepatitis consists mainly of a diet rich in proteins and carbohydrates, quick recovery of the patient will obviously be accelerated by a quick restoration of his appetite. It appears therefore that, whilst in your opinion "there is little theoretical justification for their use," the ill patient is greatly helped by those B vitamins.

Lastly, Sir, B vitamins have been used with great success by many of us in severe and less severe toxic states. Together with Mr. R. S. Corbett and others, we gave large doses of B vitamins included in the drip as a routine in cases of post-operative confusional states since 1941 and the results were very satisfactory. There is no need to go into further details about the manifold application of B vitamins in other toxic states, as impressive accounts have recently been published by Gould.[9]—I am, etc.,

London, W.1. Z. A. LEITNER.

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Coma Following Dental "Gas"

SIR,—Dr. J. G. Bourne (*Journal*, May 14, p. 1223) wishes to discover the cause, nature, and incidence of failure immediately to regain consciousness after nitrous oxide gas has been administered. Curiously enough, Dr. Bourne has supplied his own answer when he states at the end of the first paragraph that "the nitrous oxide is almost always given with oxygen, though, of course, the oxygen is very much restricted."

It is not, and never has been, permissible to produce anaesthesia with nitrous oxide, or any other agent for that matter, by reducing the oxygen content of the mixture below atmospheric concentrations. In days gone by, this was frequently the only way in which it was possible to obtain unconsciousness with nitrous oxide for dental procedures in the unpremedicated out-patient. To-day we have at our disposal a variety of supplementary agents which can be added in small doses to the nitrous-oxide–oxygen mixture, reinforcing it in such a way as to induce anaesthesia without the necessity of restricting oxygen, and yet not interfering with the speed of recovery and the patient's ability to return home. One of a variety of such supplementary agents available is trichlorethylene, which I have personally used as an adjuvant to nitrous oxide in many hundreds of dental out-patients with most gratifying results.

I am quite certain that there is no inherent property in nitrous oxide which will produce post-anaesthetic coma as long as nitrous oxide "anaesthesia" is induced and not nitrous oxide "asphyxia." The tendency of "very much restricting the oxygen" must be absolutely resisted.—I am, etc.,

Saskatoon, Canada. GORDON M. WYANT.

"Half-minute" Thermometers

SIR,—Referring to Sir Henry Tidy's letter (*Journal*, June 11, p. 1426), isn't it about time this misleading and dangerous inscription was forbidden by law as are much less important inscriptions on food labels? As life or death may depend on correct temperature recording, it is really shocking that so little attention is given to it. In one large hospital I know temperature-taking is left to the student nurses, as it probably is in many others too, and to see them flicking thermometers in and out of patients' mouths is really laughable if it was not so serious. When I pointed out the futility of this procedure I was told: "Well, the thermometers are marked half-minute, and that is all the time we are allowed for taking temperatures."—I am, etc.,

Gosport, Hants. G. W. FLEMING.

Press Publicity

SIR,—From time to time the Medical Defence Union are approached by members who have been affronted by the unauthorized and unwanted use of their names in the lay press. Only too often it is necessary to advise that there is no legal remedy. However, in the issue of the *People* of January 9 last there appeared, under the headline "Man's Heart Patched in Hospital Miracle," an account of an operation performed by a thoracic surgeon at the Churchill Hospital, Oxford. Not only did the surgeon in this case object to the unauthorized use of his name and to certain inaccuracies in the article, but perhaps still more unfortunate in his eyes was the fact that the tone of the article was such as to rouse unfair hopes in the minds of patients who might think he could perform similar "miracles" on them. In this case action was possible, for the article was libellous: proceedings were accordingly instituted and a correction and apology appeared in the issue of the *People* of April 24.—I am, etc.,

London, W.C.1. ROBT. FORBES,
Secretary, Medical Defence Union.

POINTS FROM LETTERS

Swallowed Open Safety-pin

Dr. A. FRY (London, S.E.25) writes: Reading the recent correspondence in the *Journal* about swallowed hair-grips reminded me about a case which I had some years which may be of some interest. A female baby, aged 9 months, was brought with a history of having swallowed an open safety-pin. An *x*-ray film of the abdomen showed the open safety-pin present in the left lumbar area—probably in the stomach—with its angle downward and pointed end upward. There were no symptoms. Three days later the safety-pin was seen in the right iliac fossa—probably caecum. The pointed end was directed upwards. No aperients or other treatment was given. The following day the open safety-pin passed through the anus without any incident. It is remarkable that such a difficult foreign body should pass through the whole gastro-intestinal tract without any complications.

Forward Looking

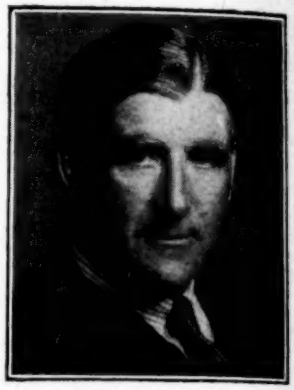
Dr. REGINALD FISHER (Kings Langley) writes: Perhaps this case may be worth recording. A patient, who has suffered from arthritis of the spine for several years, has been fitted with a plastic jacket support which fixes the spine, both lumbar and cervical, and keeps her chin up. This relieved her pain but she could not see the ground nearer than 8 ft. (2.4 m.) from her feet, which made her walking difficult and uncertain, more so as she is of a nervous disposition. I thought that a prismatic lens in her spectacles might bring her line of sight nearer her toes. Mr. Hope Gunning kindly calculated the lenses required and Messrs. Clement Clarke made the spectacles, which have helped her a good deal. She now walks about with confidence. I had not heard of this complication before and perhaps others also may not have done. The prisms for distance were 5D base down and for reading 15D base down.

Obituary

D. B. BLACKLOCK, C.M.G., M.D., D.P.H., D.T.M.

We record with regret the death at his home at Mawnan, Cornwall, on June 10 of Professor D. B. Blacklock, who was professor of tropical hygiene in the University of Liverpool from 1934 to 1945. He had previously occupied the chair of tropical diseases of Africa and the chair of parasitology in the university. He was 77 years of age.

Donald Breadalbane Blacklock was born at Oban, Argyllshire, on January 7, 1879, the son of the Rev. John Blacklock, a minister of the Presbyterian Church. He was educated at Fettes College and at Edinburgh University, where, after a distinguished career both in studies and in sport, he graduated M.B., Ch.B. in 1902, proceeding to the M.D. in 1909. He took the Diploma in Public Health (London) in 1907, and the Diploma in Tropical Medicine (Liverpool) in 1911, when he was appointed research assistant to the Liverpool School of Tropical Medicine's research laboratory at Runcorn, then under the directorship of Warrington Yorke. He worked at the Runcorn laboratory until 1914, when he was appointed, first, director of the laboratory, and, later, lecturer in parasitology to the Liverpool School, where Warrington Yorke had recently been appointed Walter Myers professor of parasitology. During the first world war Blacklock served in the R.A.M.C. from 1915 until 1919. With the rank of lieutenant he was medical officer in charge of malaria wards at the Belmont Road auxiliary military hospital from 1916 to 1918, where he worked under the late Professor (temporary lieutenant-colonel) J. W. W. Stephens, F.R.S.; from 1918 to 1919 he held the rank of captain.



[*Elliott & Fry*

In 1921, when the Sir Alfred Lewis Jones Research Laboratory was opened by the Liverpool School at Freetown, Sierra Leone, Blacklock was created professor of tropical diseases of Africa by the University of Liverpool and was appointed the first director of the laboratory. He worked at Freetown for eight years, during which time he built up and established the laboratory on a firm and stable footing, and carried out and directed a very large volume of research, including work on beriberi, schistosomiasis, malaria, trypanosomiasis, goitre, *Onchocerca volvulus*, and metazoan immunity (for which a three-years' grant was made by the Empire Marketing Board), as well as carrying out a survey of the diseases of Sierra Leone on behalf of the Sierra Leone Government. His most noteworthy achievement was the proof that *O. volvulus* is transmitted to man by *Simulium damnosum*, a small biting fly. This for the first time allowed methods of control to be applied to a disease which causes much suffering in many parts of the tropical world. In 1929 he returned to Liverpool from Freetown, to succeed Professor Yorke in the

Walter Myers chair of parasitology, a position which he held until 1934, when he was appointed the first holder of the newly established chair of tropical hygiene. On his retirement from the chair in 1945 the title of emeritus professor was conferred upon him.

In the second world war Blacklock was called upon by the Government in 1940 to undertake a special mission in Sierra Leone to investigate certain problems of malaria which had arisen there under war conditions. With the rank of surgeon-captain in the R.N.V.R., and at the same time holding an appointment as senior medical officer (special mission) under the government of Sierra Leone, he carried out investigations from August, 1940, until October, 1941. The work was eminently successful, and in 1942, in recognition of his notable services, he was appointed C.M.G. In September, 1945, after being in charge of the Liverpool School of Tropical Medicine for two years and four months, following the death of Professor Warrington Yorke, its previous director, Blacklock retired under the age limit. He was presented with the Mary Kingsley medal by the school in 1949.

He took part in the school's 32nd expedition, despatched in 1914 to Sierra Leone to study sleeping sickness and other diseases. In 1935 he was awarded a Leverhulme research fellowship to carry out "a study of the present practice of hygiene (including rural hygiene) in certain Eastern countries." Accompanied by his wife, who held a similar fellowship for "a comparative study of the organization for the improvement of health of women and children in Eastern countries," he visited China, Malaya, Burma, India, Ceylon, and Palestine on a tour which lasted from July, 1935, to January, 1936. When he retired from the chair of tropical hygiene in the Liverpool School of Tropical Medicine in 1945, after an association with the school lasting 34 years, he went to live in the West country.

Blacklock's clear and incisive mind marked him out as an excellent lecturer, and his textbook, *A Guide to Human Parasitology*, written in collaboration with T. Southwell, has gone through many editions, and bears witness to his powers as a teacher. A member of the British Medical Association for nearly 50 years, he was twice president of the Sierra Leone Branch (1923–5 and 1926–7). Earlier, he acted as one of the honorary secretaries of the Section of Tropical Medicine at the Liverpool Annual Meeting of the Association in 1912, and at Cambridge in 1920 he served as a vice-president of the same section.

In 1922 he married Dr. Mary Georgina Thompson, of Bellaghy, Co. Derry, whose work in medicine both at home and overseas was recognized by the Government in 1945 by her appointment as C.B.E. Mrs. Blacklock survives him. There are no children.

Professor G. MACDONALD writes: Blacklock enjoyed adventure, and he had plenty in the discovery of Africa both in the physical and medical senses. He was one of the most travelled persons in West Africa at a time when to travel was to walk and to be out of touch for long periods. He was fascinated by the country and its people and by the people's lives, habits, and humour. But most particularly he was fascinated by the riddle of the diseases which beset them, for even the broad outline of their pattern of incidence was almost unknown, and in many cases there were great gaps in our knowledge of aetiology, transmission, and epidemiology. His fascination led to many studies; a medical survey of the protectorate in which he took serological and cultural techniques to the remote village; researches on malaria, blackwater fever, schistosomiasis, trypanosomiasis, and other conditions, and experiments in village sanitation in the almost unknown hinterland. In all of these he added to knowledge, but running through the diversity of interests there was one main stream of work—the study of *Onchocerca volvulus* and its transmission, which all the world now knows, through him, is by flies of the genus *Simulium*. His conviction of its importance at a time when most disregarded it completely anticipated the present estimation; his studies were necessarily largely carried out in almost inaccessible places and in temporary camps with limited equipment, but their design, the form of the work over several years, and the demonstration of findings were as precise as those of any purely laboratory experiment. This was his major single contribution to knowledge which entitles him to an honourable place among the pioneers of tropical medicine, for it was a brilliant work carried out under arduous conditions demanding the highest intellectual and technical ability. However, his establishment and management of the first British permanent medical research laboratory in Africa was in the end probably equally important; it led to the accumulation of much knowledge of which he was the origin though not necessarily the author. Those who worked with him in it will always remember his high intellectual stature, his warmheartedness, and his good will to all whom he thought sincere. They remember too the support which Mrs. Blacklock gave him in his life and work and their joint kindness to all with whom they came into contact. The Blacklocks, by their scientific work, introduction of concepts of maternal and child care, and generous natures, left an indelible memory in a very wide circle of friends, African and European, who will sympathize very deeply with Mrs. Blacklock in her loss.

C. E. RHODES, M.B., B.S.

We record with regret the death on June 16 of Surgeon Lieutenant C. E. Rhodes at the age of 27. He lost his life in circumstances of great gallantry. Surgeon Lieutenant Rhodes, a National Service medical officer in the R.N.V.R., was serving in H.M.S. *Maidstone*, a submarine depot ship lying in Portland Harbour. When an explosion occurred in H.M. Submarine *Sidon*, which was alongside the *Maidstone*, he immediately boarded the submarine and without hesitation went below to help the injured. He succeeded in rescuing at least one of the crew, but when the order was given to abandon the sinking submarine he did not return. In the words of a colleague, "Either he never heard that order or he chose, true to his calling, to stay below tending the injured." The *Sidon* sank some twenty minutes after the explosion. Charles Eric Rhodes was born at Whitworth on April 3, 1928. He received his medical training at the London Hospital and qualified M.R.C.S., L.R.C.P. in 1952, taking the London degrees of M.B., B.S. in the same year. He then held the appointments of house-physician at the London Hospital and house-surgeon at Harold Wood Hospital before entering the R.N.V.R. as a temporary surgeon lieutenant on December 31, 1953, for the period of full-time national service. After a short time at R.N. Barracks, Portsmouth, he was appointed to H.M.S. *Maidstone* on February 8, 1954. He was sports officer of the depot ship and a keen yachtsman. He leaves a widow and a three-weeks-old daughter.

Dr. A. E. CLARK-KENNEDY writes: Rhodes was a student when I was dean of the London Hospital Medical College and when he qualified he became my house-physician. So it was my privilege to know him well, and the good fortune of others to know him well, too. For through his personality he left his mark on the College, and, had this disaster never happened, he would still have been among those we all remember and always rejoice to meet again. Why was he so much liked? For his ready willingness to help others,

I think; for his kindly tolerance of incompetence in the beginner; for his ever readiness to organize activities so that others might enjoy themselves; for his ability as a leader often of the lesser men; for his quiet competence in getting things done; for his love of helping others to do the many things which he so rightly thought worth while doing himself. Reasons such as these led him to become the first non-playing secretary of rugger and, although exceedingly short-sighted, a pillar of the second fifteen. All in the know agree that our present high standard at the game is largely due to his energy and enthusiasm. But his intimate friends will remember him, not on the rugger field, rather on summer seas; in a dinghy instructing a beginner in the art on the estuary at Burnham, or more than pulling his weight in a larger boat on some ocean race. Quietly he organized me. His patients loved him, and he was always ready to give a helping hand to the diffident clerk. Intellectually he was not exceptional, but what mattered that? Far more important his energy and enthusiasm for everything he touched turned him into a first-class all-round doctor, and, had he lived, he would have found his rightful place among the *élite* of general practitioners. But that was not to be. His love of the sea took him, when the time came, into the Navy, and when the call came he did exactly what, as so many have said to me, they would have expected Rhodes to do under the circumstances with which he was so suddenly confronted. So he died true to the profession in which he had so recently started, true to the tradition of the Navy in which he was privileged temporarily to serve, above all true to himself as a man and to the sea on which his heart was set. The deepest sympathy of all at the London go out to his widow in her pride and her distress.

With the death of Dr. ARTHUR DAVIDSON on January 20 the medical profession in Australia, and in New South Wales in particular, has lost one of its most energetic workers and wisest counsellors. A member of the council of the New South Wales Branch of the British Medical Association from 1930 to 1946, he will be remembered by members of the United Kingdom delegation to the 103rd Annual Meeting of the Association at Melbourne in 1935 as the president of the Branch which first welcomed them on their arrival at Sydney. Born in October, 1891, Arthur Madgwick Davidson was educated at Brisbane Grammar School and at Sydney University, where he graduated M.B., Ch.M. in 1915. After active service with the Australian Imperial Force in the first world war, during which he was mentioned in dispatches and, in 1919, appointed O.B.E., he established the general practice at Enmore, New South Wales, which he was to serve until his death. Service was, indeed, the keynote of his career; he became honorary surgeon to the Marrickville District Hospital, honorary obstetrician to the Bethesda Hospital, senior medical officer to the Braeside Maternity Hospital, and honorary medical officer to the Moore Theological College, in addition to a variety of other appointments of a public nature. It was inevitable that a man of such tireless energy and attainments should acquire a most successful practice. Dr. Davidson had the ability both to think and to speak clearly and logically, and this ability enabled him to give opinions which were invariably sound and criticisms which were always constructive, qualities which were particularly valued by his colleagues of the Australasian Medical Publishing Company—the publishers of the *Medical Journal of Australia*—of which he was a director for a number of years. These qualities, coupled with his ready grasp of financial affairs and his experience of the problems of general practice, led to his being largely responsible for the formation of the British Medical Agency in New South Wales, and almost wholly responsible for the organization of Medical Finance, Ltd., a company formed with the object of assisting young graduates returning from service in the second world war to enter practice. Dr. Davidson leaves a widow, two daughters, and three sons, two of whom are members of the medical profession.

Dr. H. C. S. WOODWARD died in a Coventry hospital on March 22 at the age of 86. Born on July 15, 1868, the son of Canon Matthew Woodward, of Folkestone, Herbert Croker Sperling Woodward was educated at St. Edward's School, Oxford, and at Downing College, Cambridge, receiving his clinical training at St. Thomas's Hospital. At Cambridge he was junior demonstrator of anatomy for a time, and after graduating M.B., B.C. in 1903 he held the appointment of house-physician at the Victoria Hospital for Children, Chelsea. In 1904 he entered general practice at Worksop, Nottinghamshire, becoming also honorary assistant surgeon to the local Victoria Hospital and medical officer to the Post Office. He settled at Kingston Bagpuize, near Abingdon, Berkshire, in 1907, and there he was appointed district medical officer and public vaccinator. When he retired from practice in 1933 he continued to live in the same village and often took posts as a locumtenent, mainly for colleagues in the neighbouring counties. Dr. Woodward will be remembered by those who knew him as a fine example of a professional man of the old school. He leaves a widow and two sons.

The death has occurred in Edinburgh at the age of 73 of Dr. POLLOK DONALD, who was in medical practice at Leith for over 35 years. Pollok Donald was born on November 12, 1881, and was educated at George Watson's College and at Edinburgh University, where he graduated M.B., Ch.B. in 1907. Six years later he obtained the Manchester D.P.H. After serving as house-physician at Leith Hospital, he took up an appointment under the late Sir James Mackenzie in Burnley. During the first world war he served with the R.A.M.C. in Greece, and on demobilization he joined his father, the late Dr. George Donald, in practice at Leith, and continued to work there until his retirement last year. He succeeded his father as parish doctor to North Leith, and was visiting physician to the Poor House Hospital at Seafield, now the Eastern General Hospital. He was on the board of management of Leith Hospital, and during the last war he was keenly interested in Civil Defence and commanded a first-aid unit.

Dr. C. C. ROBSON writes: As one who was privileged to be a close friend of the late Dr. Donald for the last thirty years, I was in a position to appreciate fully the richness of his character and the sincerity of his nature, which so endeared him to his many patients and friends. Throughout his long career of practice in Leith he was ever the wise and kindly counsellor, and the well-known term "family doctor" could be applied to Dr. Donald in the fullest and most lovable sense. His wide knowledge of medicine and of world affairs enriched his friends, and, as this knowledge was linked with an innate modesty and shyness, one seemed to value his advice all the more. When on holiday his favourite pursuits were golf and fishing, and he was also a water-colour painter of considerable merit. He practised all of these pleasures with a lightheartedness which made him the ideal holiday companion. After a long and distressing illness borne with that fortitude which one could expect from such a fine man, Dr. Donald has left behind him a memory which will live long in the minds of his many patients and friends, by whom he will be sadly missed. To his wife, to his son who has succeeded in the practice, and to his daughters is extended the fullest measure of sympathy in their irreparable loss.

The death occurred on June 2 of Dr. E. R. WEIR, who practised in Glasgow for many years. He was 81 years of age. Edward Roberts Weir was born on October 4, 1873, and was educated at Glasgow University, where he graduated M.B., Ch.B. in 1897. Two years later he obtained the Edinburgh degree of B.Sc. in public health. After graduation he held appointments at the Kennedy Street and Belvidere branches of the City of Glasgow Fever Hospital. Later, he worked in the Glasgow public health service before entering general practice in Glasgow, becoming also an assistant physician to H.M. prison at Barlinnie. Towards the end of the first world war he left Glasgow for Innellan,

Argyllshire, and from 1925 to 1932, when he returned to Glasgow, he was in practice at Dunoon, where he was also medical officer to the Dunclutha and King Street Homes and to the Post Office. In his younger days Dr. Weir was a keen golfer, and up to the end of his life enjoyed a game of bowls. He took a considerable interest in politics, and he was a great lover of English literature, being widely read in Scott, Dickens, and R. L. Stevenson. By his death there has passed away a lovable and happy personality, and those who knew him best miss him most.—J. C.

Dr. J. J. SILKE, a well-known general practitioner of Sutton Coldfield and the Erdington district of Birmingham, died suddenly in Queen Elizabeth Hospital, Birmingham, on June 2 at the age of 53. James Joseph Silke was born on August 22, 1901, and graduated M.B., B.Ch. from the National University of Ireland in 1924. He was demonstrator in anatomy and physiology at University College, Dublin, and, later, house-surgeon at St. Vincent's Hospital and Dispensary, Dublin. He then came to England and was in practice at York from 1927 to 1933, when he moved to Coventry. In 1937 he settled at New Oscott, Erdington, where he remained in practice for the rest of his life. During the second world war Dr. Silke served as a medical officer in the Home Guard, and the local first-aid organizations and industrial ambulance services also received his whole-hearted support. A staunch Roman Catholic, he was a past president of the City of Birmingham Circle of the Catenian Association. In his younger days Dr. Silke was a notable athlete, winning a number of Irish sprint championships, and he also played Rugby football as a member of the Irish trial fifteen. He leaves a widow and two young children.

The obituary of Professor PETER PATERSON was printed in the *Journal* of March 19 (p. 735). Dr. GEORGE A. GRANDSOULT writes from British Guiana: I should like to record my humble tribute—belated because I am several thousand miles away—to Professor Peter Paterson, an able surgeon and excellent teacher. I was one of his students before the first world war, and in the early days of the war was honoured when he made me his outdoor house-surgeon, during which period I acquired much knowledge from him and his assistant, the late Mr. Milne McIntyre. These two (P. P. and M. M., as they were endearingly spoken of) will always be revered by their students, many of them now scattered over the surface of the globe.

Medico-Legal

AMERICAN RESOLUTION ON A.I.D.

The following statement was approved by the American Society for the Study of Fertility at a meeting held in Atlantic City on June 4. The Society has a membership of 500 specialists.

"If it is in harmony with the beliefs of the couple and the doctor, donor artificial insemination is a completely ethical, moral, and desirable form of medical therapy.

"Conditions under which donor artificial insemination is acceptable include: (1) Urgent desire of the couple to have such therapy applied to the solution of their infertility problems. (2) Careful selection by the physician of a biologically and genetically satisfactory donor. (3) The opinion of the physician, after thorough study, that the couple will make desirable parents.

"Those physicians who have carried out donor insemination for several decades can attest that in many cases it is a more desirable procedure for acquiring a family than adoption. One great advantage of donor insemination is that it provides the opportunity for the husband to share the months of his wife's pregnancy and her childbirth. From observation over many years the membership is impressed by the almost universal good results achieved in respect to children and the entire family unit. The fact that, in some instances, patients have returned for as many as four children by donor insemination is further proof of the happiness it bestows."

Medical Notes in Parliament

Poliomyelitis Vaccine Trials Deferred

It has been decided to postpone trials in this country with the American poliomyelitis vaccine following the Medical Research Council's investigation of the Cutter vaccine incident. This decision was made known on June 17 by the Minister of Health in a written reply to Mr. D. W. WADE (Huddersfield, West, Lib.).

Mr. IAIN MACLEOD stated that a member of the staff of the Medical Research Council had just returned from a visit to the United States, where he had been studying the latest developments. No explanation for the Cutter vaccine incident had yet been found, but it was possible that certain batches contained live virus. He understood that the safety tests to be applied to the vaccine in the United States had been greatly multiplied, including a closer control of manufacturing processes. Pending the introduction and application of similar measures here, the Medical Research Council had, he understood, postponed the start of any field trials. This would probably involve a postponement until the late autumn of this year—that is, until after the normal epidemic season for the disease. There were a number of questions arising out of the production and use of poliomyelitis vaccine in this country, and its possible export abroad, such as the determination of the age groups to which the vaccine should be offered when mass immunization was possible. The Secretary of State for Scotland and he were asking the Central and Scottish Health Services Councils to advise them upon this and similar matters.

Mr. A. BLENKINSOP (Newcastle-upon-Tyne, East, Lab.), questioning the Minister about this decision on June 20, said that all welcomed the fact that they were to proceed with care and proper research before using the vaccine, and asked if the Minister was satisfied with the facilities and provision of appliances for the research. Mr. MACLEOD said that was one of the matters on which the Medical Research Council would advise. Mr. SOMERVILLE HASTINGS (Barking, Lab.) asked if the vaccine was still being manufactured here by the two firms the Minister had named. Mr. MACLEOD replied that he thought it was only in active production by one of them.

Heroin Addicts

The HOME SECRETARY informed Mr. SOMERVILLE HASTINGS (Barking, Lab.) on June 16 that 52 heroin addicts were known in England and Wales and two in Scotland. There were no persons in respect of whom addiction was suspected but not proved. Drug addiction was not compulsorily notifiable, but he had no ground for thinking that there was any substantial hidden addiction. From January 1, 1950, to date, 23 persons were convicted in respect of 24 offences involving heroin, one person having been convicted twice. Of these 23 persons, 15 were known heroin addicts and one person, who had since left the country, was suspected to be addicted to the drug.

The number of convictions for offences involving heroin since 1950 had been:

1950—3	persons	convicted,	all addicts.
1951—4	,,	,,	, of whom 2 were addicts.
1952—2	,,	,,	, of whom 1 was an addict and 1 a suspected addict.
1953—5	,,	,,	, of whom 3 were addicts.
1954—7	,,	,,	, (1 of them twice), of whom 3 were addicts.
1955—3	,,	,,	, of whom all 3 were addicts.

Price Reductions of Drugs

Mr. A. BLENKINSOP (Newcastle-upon-Tyne, East, Lab.) asked the Minister of Health whether he would give information regarding recent voluntary reductions of prices of proprietary and basic drugs and dressings prescribed under the Health Service. Mr. MACLEOD replied on June 17 that since May, 1953, of the 73 most expensive and frequently

prescribed proprietary preparations, 29 had been reduced in price (many by between 20% and 50%), some of these reductions reflecting in part reductions in the basic drug prices. In addition, special provisional reductions (mentioned in a reply on January 31), ranging up to 20%, were recently arranged with manufacturers in the prices of 19 proprietary preparations. During the same period the prices of certain important basic drugs and their corresponding products had been reduced, some of them several times. These voluntary reductions include some recent ones (since June, 1954), ranging up to 20%, in the prices of penicillin, streptomycin, chloramphenicol, hormone, and vitamin products. There had been no recent reductions in the prices of the main types of surgical dressings used in the Health Service.

A Birmingham Doctor's Action

Mr. J. BAIRD (Wolverhampton, North-east, Lab.) asked the Minister of Health on June 20 what position Dr. Brian Taylor, of Birmingham, held under the Health Service. Mr. MACLEOD said it was that of a part-time consultant to the Board of Governors of the United Birmingham Hospitals and to the Birmingham Regional Hospital Board.

Mr. BAIRD said that one of his constituents, a footplateman who was on strike, whose wife was a patient of the doctor, received a letter from him saying, "I am afraid my principles prevent me from seeing patients on strike, except in cases of emergency. Do you mind postponing the visit with your wife? If you will phone for an appointment when the strike is over I will try to fix a convenient date." Was the attitude of the doctor not completely unethical, and was this not a case of political discrimination? Would the Minister ensure that the doctor changed his principles or that his name was withdrawn from the list?

Mr. MACLEOD said that Mr. Baird knew of the difficulty he was in. If there was any question of a breach of contract within the Service that was a matter for which he was answerable and which he would be glad to answer. The question of medical etiquette was not for him, nor was the matter of the private arrangements a doctor might wish to make with his private patients.

Mr. BAIRD said that the doctor had said that his principles did not allow him to see these people. Surely his principles must operate in the Health Service as a whole. What he was saying was that he would never see a patient on strike. Mr. MACLEOD said equally there was a matter of principle in his reply. He could not answer on matters for which there was no Ministerial responsibility. Mr. HERBERT MORRISON (Lewisham, South, Lab.) asked the Minister to consider whether a medical practitioner who made this discrimination about a man who was on strike—and on official strike—was suitable to be practising in the Health Service. Mr. MACLEOD said he did not think he could go beyond what he had said. He did not make the rules of the House, and if there was a matter in which there was no Ministerial responsibility he did not see how he could offer comment on it in the House. Mr. BAIRD gave notice that he would raise the matter again.

Mental Defectives and Sexual Acts

Mr. KENNETH ROBINSON (St. Pancras, North, Lab.) asked the Minister of Health why, under Circular H.M.(55)46, of May 10, 1955, he now required the police to be informed of sexual acts by certified mental defectives, in addition to the normal report to the Board of Control; whether he was aware that medical superintendents had been informed by his department that such reports to the police were still discretionary; and if he would revert to the earlier procedure by withdrawing the circular. Mr. MACLEOD stated that the circular was issued after consultation with the Home Secretary because the earlier procedure, which had only been in force since 1951, did not have sufficient regard to the duty of the police to investigate criminal offences. The circular advised but did not require cases to be reported to the police. He was aware of no good reason for its withdrawal.

Mr. ROBINSON observed that the Minister was surely not suggesting that the police should prosecute in cases like this. The old arrangement had been working satisfactorily. Why did the Minister want to place this additional obligation on medical superintendents? Mr. MACLEOD explained that there were cases which, under the 1913 Act, were criminal offences which came within the terms of the circular. They were getting back to the practice that applied before 1951. This was a matter of doctor–patient relationship, and the final decision whether the police should be notified was left with the medical superintendent.

Hospital Medical Officers.—In May, 1954, the latest date for which detailed information is available, there were 2,266 senior hospital medical officers in England and Wales.

Chiropody Service.—In Scotland 11 local health authorities are employing chiropodists to provide a service for old people, and nine others are making contributions to voluntary bodies who do so. In addition, many more voluntary bodies are undertaking the work with contributions from local authorities.

Vital Statistics

Infectious Diseases

Infectious diseases were less prevalent in England and Wales during the week ending June 4; the falls in the number of notifications included 873 for measles, from 25,470 to 24,597, 581 for dysentery, from 1,385 to 804, 252 for whooping-cough, from 1,455 to 1,203, 165 for scarlet fever, from 609 to 444, and 39 for acute pneumonia, from 423 to 384.

The largest falls in the incidence of measles were 584 in Yorkshire West Riding, from 2,092 to 1,508, 305 in Staffordshire, from 1,135 to 830, 259 in Kent, from 1,551 to 1,292, 238 in Leicestershire, from 1,480 to 1,242, 197 in Warwickshire, from 1,148 to 951, and the largest rises were 327 in Southampton, from 1,204 to 1,531, 221 in Essex, from 1,345 to 1,566, 150 in Bedfordshire, from 99 to 249, 138 in Derbyshire, from 361 to 499, 137 in Devonshire, from 356 to 493, 97 in Sussex, from 670 to 767. The number of notifications of whooping-cough was the lowest for two and a half years; the largest declines during the week were 79 in Lancashire, from 143 to 64, and 60 in Yorkshire West Riding, from 125 to 65. Scarlet fever reached the lowest level for almost nine months; the largest falls were 57 in Lancashire, from 97 to 40, and 41 in Yorkshire West Riding, from 76 to 35. 7 cases of diphtheria were notified, 3 less than in the preceding week, and 3 of these cases were notified in Birmingham C.B.

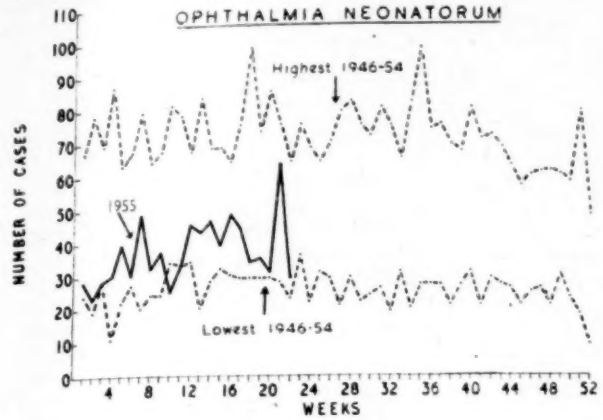
There was an increase in the week of 6 in the notified cases of acute poliomyelitis, from 25 to 31. There were 14 more for paralytic and 8 fewer for non-paralytic. The largest returns were Yorkshire West Riding 6 (Barnsley C.B. 6), Cheshire 4 (Stockport C.B. 3), London 4 (Bethnal Green 2), and Warwickshire 3 (Birmingham C.B. 3).

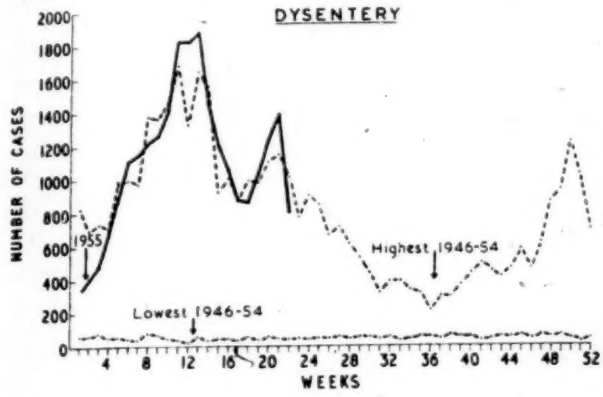
The number of notifications of dysentery was the lowest for 18 weeks. The largest centres of infection were Surrey 178 (Croydon C.B. 161), Lancashire 130 (Blackpool C.B. 24, Oldham C.B. 22, Manchester C.B. 16, St. Helens C.B. 13), Durham 78 (South Shields C.B. 18, Stanley U.D. 16, Seaham U.D. 10), Middlesex 50 (Heston and Isleworth M.B. 31), Yorkshire West Riding 49 (Huddersfield C.B. 22), London 47 (Southwark 10), Northumberland 39 (Newcastle-upon-Tyne C.B. 12), Cambridgeshire 28 (Cambridge M.B. 28), Norfolk 26 (Norwich C.B. 18), Yorkshire North Riding 21 (Middlesbrough C.B. 18), and Somersetshire 20 (Bath C.B. 20).

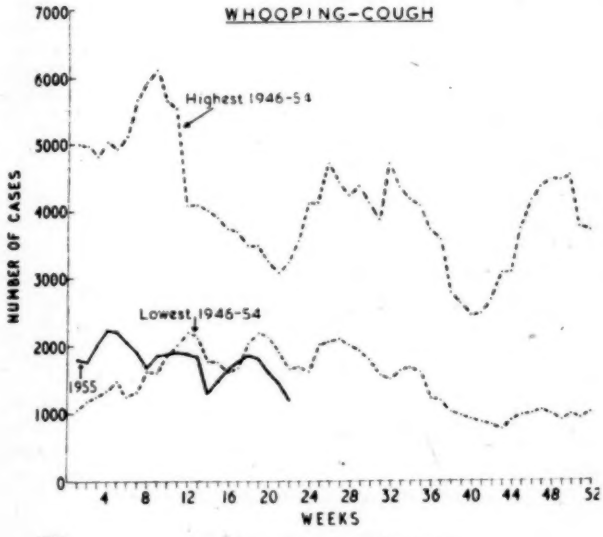
Graphs of Infectious Diseases

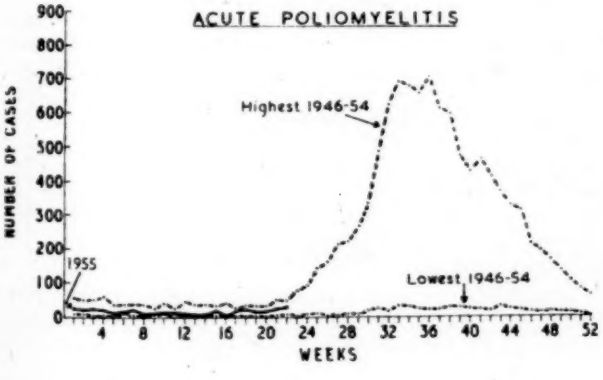
The graphs below show the uncorrected numbers of cases of certain diseases notified weekly in England and Wales. Highest and lowest figures reported in each week during the nine years 1946–54 are shown thus ------, the figures for 1955 thus ———. Except for the curves showing

notifications in 1955, the graphs were prepared at the Department of Medical Statistics and Epidemiology, London School of Hygiene and Tropical Medicine.









INFECTIOUS DISEASES AND VITAL STATISTICS

Summary for British Isles for week ending **June 4** (No. 22) and corresponding week 1954.

Figures of *cases* are for the countries shown and London administrative county. Figures of *deaths* and *births* are for the 160 great towns in England and Wales (London included), London administrative county, the 17 principal towns in Scotland, the 10 principal towns in Northern Ireland, and the 14 principal towns in Eire.

A blank space denotes disease not notifiable or no return available.

The table is based on information supplied by the Registrars-General of England and Wales, Scotland, N. Ireland, and Eire, the Ministry of Health and Local Government of N. Ireland, and the Department of Health of Eire.

CASES in Countries and London	1955					1954				
	Eng. & Wales	Lond.	Scot.	N. Ire.	Eire	Eng. & Wales	Lond.	Scot.	N. Ire.	Eire
Diphtheria	7	1	5	0		18	0	8	0	1
Dysentery	804	47	368	25		1,017	112	266	6	2
Encephalitis, acute	1	0		0		8	0	0	0	0
Enteric fever:										
Typhoid	3	0	1	0	1	3	0	1	1	1
Paratyphoid	5	0	1	0	1	6	1	1	0	0
Food-poisoning	272	16		1		214	76	0	0	
Infective enteritis or diarrhoea under 2 years				7	6				16	25
Measles*	24,597	792	198	195	311	2,834	68	232	179	311
Meningococcal infection	24	1	15	4	1	17	1	26	0	0
Ophthalmia neonatorum	29	2	12	0		37	2	6	0	
Pneumonia†	384	18	187	14		417	19	140	6	1
Poliomyelitis, acute:										
Paralytic	26	4	5	1	2	25	1	5	0	1
Non-paralytic	5	0				9	0			
Puerperal fever§	182	38	8	2		231	51	23	0	1
Scarlet fever	444	31	79	49	34	793	52	112	31	29
Tuberculosis:										
Respiratory	532	66	147	12		809	93	140	35	
Non-respiratory	80	9	36	1		136	5	22	8	
Whooping-cough	1,203	60	141	45	38	1,989	76	250	72	2

DEATHS in Great Towns	1955					1954				
	Eng. & Wales	Lond.	Scot.	N. Ire.	Eire	Eng. & Wales	Lond.	Scot.	N. Ire.	Eire
Diphtheria	0	0	0	0	0	0	0	0	0	0
Dysentery	0	0		0		0	0		0	
Encephalitis, acute		0			0		0			0
Enteric fever	0	0	0	0		0	0	0	0	0
Infective enteritis or diarrhoea under 2 years	5	0	2	0	0	5	1	4	1	2
Influenza	5	1	1	0	1	4	0	0	0	0
Measles		2	0	0	0			0	0	0
Meningococcal infection		0	1				0	1		
Pneumonia	169	25	14	7	3	154	19	18	14	5
Poliomyelitis, acute	1	0			0	0	0			0
Scarlet fever		0	0	0	0		0	0	0	0
Tuberculosis:										
Respiratory	65	11	16	3	7	80	11	9	1	8
Non-respiratory		0	3	0	1			1	1	1
Whooping-cough	2	0	1	1	0	0	0	0	0	0
Deaths 0–1 year	220	33	28	9	10	227	20	29	8	15
Deaths (excluding stillbirths)	4,910	669	575	107	149	4,714	625	571	112	150
LIVE BIRTHS	7,173	1104	1025	209	424	8,089	1298	982	255	464
STILLBIRTHS	215	28	31			202	28	20		

* Measles not notifiable in Scotland, whence returns are approximate.
† Includes primary and influenzal pneumonia.
§ Includes puerperal pyrexia.

Medical News

450th Anniversary of R.C.S.Ed.—As part of the 450th anniversary celebrations of the Royal College of Surgeons of Edinburgh on June 20 and 21, the DUKE OF EDINBURGH was made an honorary Fellow of the College. Later, at the anniversary banquet he was presented with a silver replica of a bleeding-cup. A full account of the proceedings will appear in next week's issue of the *Journal*.

Golden Wedding.—Sir ROBERT and Lady HUTCHISON will celebrate the golden anniversary of their wedding on June 27, and all his old students and colleagues at the London Hospital and at the Hospital for Sick Children, Great Ormond Street, will wish to join us and their many other friends in hoping they will have a very happy day. Sir Robert Hutchison, who is a past President of the Royal College of Physicians of London, the Royal Society of Medicine, the British Paediatric Association, and the Association of Physicians of Great Britain and Ireland, is now in his 84th year. He first met Laetitia Norah Moore-Ede at the London Hospital Medical College, where she was a medical student, and they were married in 1905, the year after Dr. Moore-Ede obtained the London M.B. The singular success of this medical partnership has been a joy to all their friends.

Obstetric Medicine Research Unit at Aberdeen.—The Medical Research Council announces that, in collaboration with Aberdeen University and the North-eastern Regional Hospital Board for Scotland, it is establishing a unit for research in obstetric medicine at Aberdeen, under the honorary directorship of Professor DUGALD BAIRD. The term "obstetric medicine" in the unit's name is to indicate, in the words of the announcement, "that general health problems, of the type which are the concern of the research physician, have become as important as the surgical aspects of obstetrics." For some years now Professor Baird has headed a research team at Aberdeen which has been studying maternity problems by a combined epidemiological, clinical, and laboratory approach. The Scottish Hospitals Endowment Research Trust has promised a substantial grant to the university for the construction of a building adjoining the Aberdeen Maternity Hospital to house the unit.

Commonwealth Health and Tuberculosis Conference.—The fourth Commonwealth Health and Tuberculosis Conference was opened at the Royal Festival Hall, London, on Tuesday, June 21, and continued until Friday. Most of those present represented local authorities in the United Kingdom, but a very large number came from the British Dominions and Colonies, as well as from over 50 other countries. The Minister of Health, Mr. IAIN MACLEOD, opened the Conference. In many areas, he said, the waiting-list for tuberculosis beds had virtually disappeared and elsewhere waiting time had been substantially reduced. There were now twice as many mass radiography units operating as at the start of the National Health Service. In the future they must look more to the preventive side. The DUCHESS OF PORTLAND, chairman of council of the National Association for the Prevention of Tuberculosis, presided over the first session of the Conference, which had as its subject for discussion, "How social environment can combine with specific medical measures to prevent the disease." In later sessions child hygiene and infection and the choice of drugs in the medical and surgical treatment of tuberculosis were among the subjects discussed.

Measles Virus.—In an address at Harvard, U.S.A., last month Professor JOHN F. ENDERS, who shared the 1954 Nobel Prize for Medicine for his work on the culture of poliomyelitis virus, reported an important advance in the identification of measles virus. Using similar tissue culture techniques, Professor Enders and his colleague Dr. T. C. PEEBLES reported in May, 1954, the successful propagation of cytopathogenic agents from the blood and throat washings of patients with typical measles (*Proc. Soc. exp. Biol.*, 1954, **86**, 277). These survived serial passage in cultures of human or monkey renal cells, and showed properties strongly suggesting that they were indeed measles virus. They produced a characteristic cytopathogenic effect *in vitro*, similar to that seen in the body in acute measles, and this effect was neutralized by the addition of convalescent measles serum. Further, antigen was evolved during cultivation which reacted specifically in complement fixation tests with convalescent serum. But final proof of identity was lacking. This has now been provided. Professor Enders now reports the production of clinical measles in wild cynomolgus monkeys after inoculation with tissue culture material that had undergone repeated passages *in vitro*. It was necessary to use freshly captured monkeys from the Philippine Islands as nearly all the laboratory monkeys examined were found to have measles antibody in their serum. This work may open the way to the development of a measles vaccine, particularly as so far there appears to be only one type of measles virus to contend with.

Clinic for Alcoholics.—The Society for the Study of Addiction, acting jointly with the National Association for Mental Health and the Church of England Temperance Society, has opened a clinic at 14, Gloucester Place, London, W.1 (telephone: Welbeck 5222) for the treatment of alcoholics. The clinic is staffed by a panel of doctors from the Society for the Study of Addiction, who provide their services free, and there is a full-time psychiatric social worker. Hours of attendance are from 2 to 5 p.m. on Tuesdays and Fridays, and there is no charge. Doctors referring patients to the clinic are asked to send clinical details beforehand.

New Journal on Alcoholism.—Blackwell Scientific Publications, Oxford, has just issued the first number of the *International Journal on Alcohol and Alcoholism*. It is the official organ of the International Institute for Research on Problems of Alcohol. Besides original papers in English, French, German, Italian, and Spanish, each issue will contain lists of contents of current journals on alcoholism, and it is intended to publish classified bibliographies of the world literature on special aspects of the subject. The journal will appear three times a year at an annual subscription of 30s.

Honorary Degrees at Toronto.—To mark the occasion of the joint meeting of the British, Canadian, and Ontario Medical Associations in Toronto, on June 17, the honorary LL.D. of the Toronto University was conferred on six of the participating doctors, three from Britain and three from Canada. They were Professor STANLEY GRAHAM, Dr. E. A. GREGG, Sir JOHN MCNEE, Dr. T. C. ROUTLEY, Dr. G. F. STRONG, and Dr. W. P. WARNER.

Clinical Thermometers.—On June 21 the British Standards Institution held a press conference at which the merits of the British Standard thermometer (No. 691) were stressed. The B.S. thermometer is marked "quick," "medium," or "stubby," and bears no reference to time on it.

Mementos of the War Memorial.—Picture postcards and some copies of *In Memoriam 1939–1945*, the illustrated booklet prepared for the unveiling ceremony of the War Memorial in the Court of Honour at B.M.A. House last November, are available from the Publishing Manager, B.M.A. House, Tavistock Square, London, W.C.1, at 6d. and 2s. 6d. each respectively (post free). Besides full-page photographs of the memorial and the individual statues, with the sculptor's explanation of their symbolism, *In Memoriam* contains the names of the medical men and women of the British Empire and Commonwealth who are commemorated by the memorial.

Retirement of Coroner to Royal Household.—The retirement of Lieutenant-Colonel W. H. L. MCCARTHY as coroner to the Royal Household will take place on June 30. He

has held this position for 21 years. Educated at Trinity College, Dublin, and St. Thomas's Hospital, London, Colonel McCarthy served with distinction in the R.A.M.C. during the 1914–18 war, being awarded the D.S.O. and M.C. Later he was M.O.H. for Chelsea. Besides being medically qualified Colonel McCarthy is a barrister-at-law and a J.P.

Chairman of Royal Sanitary Institute.—Dr. A. PARKER, D.Sc., director of the Fuel Research Station of the Department for Scientific and Industrial Research, has been elected chairman of the Institute and will take office in October. Dr. Parker, whose subjects are physical chemistry and thermodynamics, has been closely connected with recent investigations into the causes of "smog."

Dr. L. G. Eddey, until recently chief medical officer to the Ministry of Health, Gold Coast, and before that director of medical services there, has accepted a two-year W.H.O. appointment in Nepal. His job will be to establish a school for the training of health assistants in Katmandu.

COMING EVENTS

British Association.—The 17th annual meeting will be held this year in Bristol, August 31–September 7, under the presidency of Sir ROBERT ROBINSON, O.M., F.R.S. His presidential address will be on "Science and the Scientist." Preliminary programmes are available from the secretary, British Association for the Advancement of Science, Burlington House, London, W.1.

Vitamin E Congress.—Third International Congress in Venice, September 5–8. Details from Professor Dr. EMILIO RAVERDINO, Via Pietro Verri 4, Milan.

International Union of the Medical Press.—The second congress will be held at the Faculty of Medicine, Paris, on October 21 and 22, under the chairmanship of Professor LOEPER. Details from secretariat, I.U.M.P., 12, rue de l'Ecole de Médecine, Paris, 6e.

NEW ISSUES

British Journal of Ophthalmology.—The new issue (Vol. 39, No. 6) is now available. The contents include:

INCIDENCE OF HUMAN INFECTION WITH ONCHOCERCIASIS IN DIFFERENT COMMUNITIES IN RELATION TO THE INCIDENCE AND TYPE OF THE OCULAR LESIONS. F. H. Budden.
SEDATION FOR OPHTHALMIC SURGERY. COMBINATION OF CHLORPROMAZINE, PROMETHAZINE, AND PETHIDINE. R. A. Burn, D. A. B. Hopkin, G. Edwards, and C. M. Jones.
BINOCULAR DIAPHRAGM. R. H. P. Fernandez, O. P. Edmonds, and T. A. Hunt.
ELECTRORETINOGRAM DURING DEVELOPMENT OF HEREDITARY RETINAL DEGENERATION IN THE DOG. H. B. Parry, Katharine Tansley, and L. C. Thomson.
KERATOME OR KNIFE INCISION FOR CATARACT. ASSESSMENT OF 180 CASES. Howard Reed.
SEX OF NUCLEI IN OCULAR TISSUES. Christopher Pedler and Norman Ashton.
CALIBRATION OF TONOMETERS. C. R. S. Jackson.
HEREDITARY POSTERIOR POLAR CATARACT WITH REPORT OF A PEDIGREE. C. G. Tulloh.
RETINAL IMAGE IN AXIAL AND REFRACTIVE AMETROPIA. Joseph I. Pascal.

Issued monthly; annual subscription £4 4s.; single copy 8s. 6d.; obtainable from the Publishing Manager, B.M.A. House, Tavistock Square, London, W.C.1.

British Journal of Preventive and Social Medicine.—The new issue (Vol. 9, No. 2) is now available. The contents include:

OBSERVATIONS ON 1,078 PERINATAL DEATHS. A. M. Stewart, J. W. Webb, and D. Hewitt.
MUSTARD GAS POISONING, CHRONIC BRONCHITIS, AND LUNG CANCER. AN INVESTIGATION INTO THE POSSIBILITY THAT POISONING BY MUSTARD GAS IN THE 1914-18 WAR MIGHT BE A FACTOR IN THE PRODUCTION OF NEOPLASIA. R. A. M. Case and A. J. Lea.
INJURIES IN THE AGED. A. J. Fisher.
SOME FEATURES OF LEUKAEMIA MORTALITY. D. Hewitt.
FERTILITY AND REPRODUCTIVE HISTORY OF MOTHERS OF MONGOLOID DEFECTIVES. A. Smith and R. G. Record.
SOCIAL MEDICINE STUDIES BASED ON CIVILIAN MEDICAL BOARD RECORDS. III. PHYSICAL AND OCCUPATIONAL CHARACTERISTICS OF MEN WITH CERTAIN SKIN DISEASES. A. M. Stewart, J. W. Webb, and D. Hewitt.
EMPLOYMENT OF RECOVERED TUBERCULOUS PATIENTS. A. Barr.
A FURTHER STUDY OF A-B-O BLOOD GROUPS AND DIFFERENTIAL FERTILITY AMONG WOMEN IN TWO AUSTRALIAN MATERNITY HOSPITALS. R. L. Kirk, J. W. Shield, N. S. Stenhouse, Lucy M. Bryce, and Rachel Jakobowicz

Issued quarterly; annual subscription £2 2s.; single copy 12s. 6d.; obtainable from the Publishing Manager, B.M.A. House, Tavistock Square, London, W.C.1.

SOCIETIES AND LECTURES

A fee is charged or a ticket is required for attending lectures marked ● Application should be made first to the institution concerned.

Monday, June 27

POSTGRADUATE MEDICAL SCHOOL OF LONDON.—4 p.m., Dr. R. Bing (Alabama): Metabolism of the Heart.

Tuesday, June 28

INSTITUTE OF DERMATOLOGY.—5.30 p.m., Dr. P. D. Samman: Follicular Keratotic Disorders.

Wednesday, June 29

INSTITUTE OF DERMATOLOGY.—5.30 p.m., Dr. H. Haber: The Dyskeratoses.

Thursday, June 30

POSTGRADUATE MEDICAL SCHOOL OF LONDON.—4 p.m., Dr. J. F. Goodwin: Mitral Valve Disease.
RENAL ASSOCIATION.—At 41, Portland Place, London, W., 4.30 p.m., Dr. Alexander Leaf and Dr. O. M. Wrong: Control of the Volume of the Body Fluids.
ROYAL COLLEGE OF SURGEONS OF ENGLAND.—5.30 p.m., otolaryngology lecture by Dr. T. A. Davies: Relationship of Syphilis to Otolaryngology.

Friday, July 1

INSTITUTE OF DISEASES OF THE CHEST.—5 p.m., radiological demonstration by Dr. J. W. Pierce.
INSTITUTE OF LARYNGOLOGY AND OTOLOGY.—3.30 p.m., Mr. Wallace Black: Congenital Deafness.
POSTGRADUATE MEDICAL SCHOOL OF LONDON.—(1) 2 p.m., Professor H. A. Magnus: Reticulosarcoma of Bone. (2) 4 p.m., Dr. W. W. Brigden: Rheumatic Carditis.

APPOINTMENTS

CROSBY, GEOAGETTE, M.R.C.S., L.R.C.P., Assistant Medical Officer of Health, East Ham

McCARTHY, DENIS, M.B., B.Ch., Clinical Assistant at City Maternity Hospital, Gloucester.

MANCHESTER REGIONAL HOSPITAL BOARD.—P. Jewsbury, M.D., F.R.C.S., Consultant Thoracic Surgeon to Blackpool and Fylde Hospital Centre and to Northern part of the Region; G. K. Tutton, Ch.M., F.R.C.S., Consultant Neurosurgeon to Preston and Chorley Hospital Centre and to Northern part of the Region; D. A. Chadwick, M.B., Ch.B., F.F.A. R.C.S., Consultant Group Anaesthetist to North and Mid-Cheshire Hospital Centre; A. E. Smith, M.B., Ch.B., F.F.A. R.C.S., Consultant Anaesthetist, Bolton and District Group of Hospitals; S. S. Chatterjee, M.B., B.S., M.R.C.P., Whole-time Assistant Chest Physician, Baguley Hospital, Manchester; P. Chandra, M.Ch.Orth., F.R.C.S., Senior Casualty Officer, Burnley and District Hospitals; E. Cooper, M.B., Ch.B., Senior Casualty Officer, Stockport and Buxton Hospitals; J. R. Kirby, M.B., Ch.B., D.M.R.D., Consultant Radiologist to Wigan and Leigh Hospitals; J. O'Regan, M.B., B.Ch., D.P.H., Tuberculosis Physician (S.H.M.O.) to Preston and Chorley Hospitals; Thelma B. Hoyle, M.B., Ch.B., D.A., Assistant Anaesthetist (S.H.M.O.) to Burnley and District Hospitals; W. H. Helm, M.R.C.P., Consultant Chest Physician, Burnley and District Hospitals.

MANNING, ANGELA M. M., M.R.C.S., L.R.C.P., Assistant Medical Officer of Health and School Medical Officer, Warrington.

PARRY, WILFRID, H., M.B., Ch.B., D.P.H., Senior Assistant Medical Officer of Health for the City and Port of Liverpool.

PHILLIPS, THOMAS ALUN, M.B., Ch.B., D.P.H., Medical Officer of Health, Caernarvonshire Combined Sanitary Districts, Southern Division.

WILLSON, G. F., M.D., D.P.H., Deputy Medical Officer of Health and Deputy School Medical Officer to City of Oxford.

BIRTHS, MARRIAGES, AND DEATHS

BIRTHS

Middleton Price.—On May 31, 1955, at West Middlesex Hospital, Isleworth, to Daphne, wife of John Middleton Price, M.B., F.F.A. R.C.S., a daughter—Helen Rosemary.

Shotts.—On June 16, 1955, at West Middlesex Hospital, to Barbara (formerly Layman), and Alan Shotts, M.R.C.S., L.D.S., a brother for Paul—Jeremy Guy.

Welch.—On June 7, 1955, to Dr. Margaret Louise (formerly Fisher), wife of Dr. Gordon Welch, of Canfield Gardens, London, N.W., a daughter—Estelle Gillian.

Westcott.—On March 4, 1955, at Durham, North Carolina, U.S.A., to Joan (formerly Williams), wife of Dr. G. F. Westcott, a son—Robert David.

Wyman.—On June 11, 1955, at Westminster Hospital, London, S.W., to Joan (formerly Beighton), wife of Dr. J. B. Wyman, a sister for Peter and Michael.

DEATHS

Allan.—On May 11, 1955, at the Warneford Hospital, Oxford, Kenneth Bruce Allan, M.B., B.S., of 11, St. Mary's Road, Leamington Spa, Warwickshire.

Day.—On May 10, 1955, at Ryde, Isle of Wight, John Roberson Day, M.D., aged 98.

Ferguson.—On March 26, 1955, at Hanover, Germany, George Boothe Ferguson, M.B.E., M.D., of South Mountain, Ontario, Canada, aged 69.

Fowler.—On May 13, 1955, at the Royal Hospital, Putney, London, S.W., Isabella Jane Fowler, M.B., Ch.B., D.P.H., D.T.M.

Jackson.—On May 13, 1955, in hospital, James Eustace Jackson, M.R.C.S., L.R.C.P., of 8, Wilkie Road, Birchington, Kent.

Meachen.—On May 12, 1955, at Ashley Heath, Ringwood, Hants, George Norman Meachen, M.D., M.R.C.P., aged 79.

Miller.—On May 4, 1955, Ernest Alfred Miller, M.B., of Flat 17, Windermere, Lytton Grove, London, S.W., late of Upper Richmond Road, London, S.W.

Milne.—On May 5, 1955, at 9, Carmel Road North, Darlington, Co. Durham, Robert Alexander Milne, M.B., C.M.

Penny.—On May 11, 1955, at Weymouth, Dorset, Frederick Septimus Penny, C.M.G., D.S.O., M.B., D.P.H., Colonel, A.M.S., retired, aged 85.

Wallace.—On May 1, 1955, at Derwen Deg, Crickhowell, Breconshire, Harold Douglas Wallace, M.B., Ch.B., M.F.Hom., late of Bredbury.

Any Questions ?

We publish below a selection of those questions and answers which seem of general interest. It is regretted that it is not possible to supply answers to all questions submitted.

Prognosis after Puerperal Depression

Q.—*I have a patient aged 26 who has had a puerperal depression following her second pregnancy. After her first pregnancy she was mildly depressed, but this cleared up without treatment. This time she had a course of E.C.T. (six treatments) which effected a considerable improvement, and she was then discharged. After a week (two weeks after the last shock) she was readmitted, as she had relapsed. She has now started on chlorpromazine. Her personality is described as hysterical. What is the prognosis with or without further pregnancies?*

A.—The fact that this patient has suffered a depressive state after both her pregnancies suggests that the illness is unlikely to be related to temporary stress factors in her marriage, home, or career situation, and that constitutional factors must be playing a part. One would suspect a morbid family history in such a case, and certainly there will be a liability to further attacks of depression with or without further pregnancies, but the latter would be a serious risk. Puerperal depression recurring with each pregnancy tends to become more severe and to damage the personality as time goes on. In cases where there is a clear liability to manic depressive psychosis further pregnancies are contraindicated because of the risk of a full development of this condition. In any case an interval of at least five years before the next pregnancy is to be recommended.

The prognosis for the present attack of depression will depend to a certain extent on the degree to which it is a response to adverse circumstances and to stresses in the life situation of the patient and the extent to which she has a severe hysterical personality disorder. If the depression continues and is associated with early morning waking, loss of appetite and weight, any degree of self-reproach, and there are no phobias, a further course of E.C.T. should be considered. Recovery should be anticipated in the absence of phobias and a severe personality disorder.

Salt and Water Requirements in the Tropics

Q.—*How much salt and water should an average-sized man take in the Tropics each day? Are salt tablets recommended?*

A.—It is not possible to lay down any firm figures for salt and water requirements which would be universally applicable. Sweating varies with temperature, humidity, exposure to radiation, and degree of activity. The only safe rule is always to drink enough water to produce 1 litre of urine per day, and this urine should never be chloride free. As a rough guide the sweat rate of a 70 kg. man in an "average" tropical climate will not exceed 100 g. per hour in bed at night; at midday indoors sweat losses may rise to 250 g. per hour, and in light shade resting outside it may be 500 g. per hour. Individual variation is high, but in general the sweat rate is proportional to the 2/3 power of the body weight. Exercise may increase the sweat rate to 750 or 1,000 g. per hour, but such high rates are generally not sustained for long. The radiation heat load, either direct from the sun or from hot bare land surfaces, may call forth as much sweat as a brisk walk; extra sweating may also result from the specific dynamic action of a heavy meal. Sweating is least in the early morning when the air is cool and the body temperature is low; exercise in the evening, when the body temperature is already slightly raised, results in more sweating than in the morning even though the air may be as cool. A moderately active man in a hot climate can easily lose 5 litres of sweat a day and possibly twice as much.

The salt losses in the sweat are not prodigious; the sodium chloride content ranges from approximately 0.15 to 0.30%, higher concentrations being found only in experimental situations and in abnormal subjects. Normal European diet as it comes to the table probably provides 10 g. or more of salt daily, hence there is little need for large amounts of extra salt. Salt tablets are not recommended; some brands are practically insoluble and may set up a gastritis; if they are freely soluble, there is a danger of the subject becoming "oversalted" unless he drinks plenty of water, and of his having a sudden collapse. In general the rule should be, no extra salt unless water is plentiful. Provided the adrenal cortex is properly functioning, the salt losses in the sweat are nicely adjusted to the salt intake. In vast areas of the world, in Asia and Africa, the indigenous tropical population consume considerably less salt than do Europeans in temperate climates but apparently do not suffer from salt deficiency; the high intake of salt by Europeans and their "inability" to get on with less may well be a craving for a luxury.

Loss of weight in hot weather sometimes occurs with a low salt intake, resulting in "salt deficiency dehydration"; but in general it is easier to take too much than too little salt. Losses of other minerals and of vitamins in the sweat are negligible and no allowance need be made for them.

Is Mouthbreathing Harmful ?

Q.—*What are the medical objections to mouthbreathing? When is active treatment indicated, and what should it consist in if there is no demonstrable nasal obstruction?*

A.—Mouthbreathing indicates that all, or more often most, of the inspired air passes to the lungs without the benefits of nasal conditioning. A perfectly functioning nose delivers to the lungs air free from dust and living organisms, of constant temperature, and at optimum humidity. Partial or complete loss of any of these qualities renders the mouth, pharynx, and entire lower respiratory tract more vulnerable. Sudden lack of moisture in the inspired air, by causing ciliary paralysis in the trachea and bronchi, leads to a breakdown in local defence mechanisms. Such effects are observed after total laryngectomy, when the inspired air is not adequately moistened. In time, extra moisture is produced by the trachea, but never in sufficient quantity to make up for the loss of nasal function.

Active treatment to restore loss of nasal function is always indicated where there is a chance of success, partial or complete. The causes and methods of treatment of nasal obstruction are well known. Mouthbreathing, in the absence of nasal obstruction, is due to defects in the development of the jaws. Loss of nasal function in such cases is usually partial, and orthodontic treatment should be carried out at an early age. It must be remembered that obstruction due to nasopharyngeal diseases and developmental defects is often difficult to demonstrate.

Preparing Theatre for Clean Surgery

Q.—*What steps should be taken to render an operating theatre which has been used for "dirty" operations safe for "clean" abdominal surgery and orthopaedic operations the next day?*

A.—The precautions to be taken under these circumstances are very ordinary common-sense ones such as are carried out regularly in an operating theatre which has to serve for both clean and dirty cases and which, in any case, are applied periodically in all theatres. It is presumed that the septic operations have been performed with reasonable care to see that infected swabs, etc., are placed straight away after use in proper receptacles and removed from the theatre

at the earliest possible moment. The question seems to imply that it is the structure and permanent furniture of the theatre rather than the instruments, bowls, and dressings with which we are concerned. To some extent the method used will depend upon the nature of the walls and floor, but for the usual tiled walls and terrazzo floor washing with an antiseptic solution such as lysol or "dettol" is adequate. The metal surfaces of the operating table should be similarly dealt with and the Sorbo table-pad also, care being taken in this instance to dry the surface with a sterile towel to prevent undue action of the antiseptic on the rubber.

The interval of a night between operations is of great value in allowing dust to settle, especially if the floor of the theatre be left damp with antiseptic. If possible, therefore, this cleaning should be done on the evening before rather than the morning of the clean operations.

In some clinics ultra-violet light has been used to destroy bacteria, but it is doubtful if it is as efficient as the simple methods here indicated.

Idiosyncrasy to Barbiturates

Q.—*A patient of mine who has an anxiety state is sensitive to barbiturates. I have already tried quinalbarbitone, amylobarbitone, and phenobarbitone, all of which have the desired sedative effect but produce a maculo-papular rash on the body. There are also joint pains. Is there any possible way of desensitizing this patient against barbiturates?*

A.—Barbiturates may produce rashes of varying types in patients who have an idiosyncrasy. Usually the rash is of no great importance and disappears when administration of the drug ceases. Very rarely the rash may progress to produce an exfoliative dermatitis. Phenobarbitone is specially apt to give rise to a serious form of eruption which may continue to extend after administration has ceased. The rash may be accompanied by severe constitutional disturbance and the condition may end fatally.[1] It is clearly undesirable to continue to give barbiturates to patients who have developed acquired hypersensitivity even if this is shown solely by a skin rash and joint pains. There is no certain and safe way of desensitizing patients who are liable to rashes. It would seem better to try alternative sedative drugs such as chloral hydrate in small and repeated doses, carbromal, or methylpentynol.

REFERENCE

[1] Sneddon, I. B., and Leishman, A. W. D., *British Medical Journal*, 1952, 1, 1276.

Classification of Tuberculous Patients

Q.—*What are the criteria for the classifications (i) "active," (ii) "quiescent," (iii) "arrested," and (iv) "recovered" in patients with tuberculosis? Is a case still having artificial pneumothorax refills "active"?*

A.—(i) A case of tuberculosis is regarded as "active" if the disease is such that it requires a modification of the patient's mode of living, or active treatment, or if the patient may be a danger to others.

(ii) A case is regarded as "quiescent" if the general condition and exercise tolerance are good, having regard to the extent of the lesion; if there is no evidence of toxaemia; if no tubercle bacilli have been found on three consecutive monthly examinations by stained film; and if changes revealed by other clinical investigations and by serial radiographs point to retrogression of the tuberculous lesion.

(iii) A case is regarded as "arrested" if the disease has been quiescent for a continuous period of at least two years, or, if non-respiratory, the disease is "quiescent" and there is reason to believe it is unlikely to recur.

(iv) A case is regarded as "recovered" if the state of quiescence has continued uninterrupted for a period of five years. These descriptions are in accordance with Ministry of Health definitions. Nowadays most clinicians would prefer the sputum to be negative on culture before calling the case quiescent. A case still having artificial pneumothorax refills can be regarded as quiescent if it falls within the above definition.

Effect of Previous Passive Immunization on Response to Active Immunization

Q.—*What effect on the antibody response to active immunization have previous injections of the corresponding antitoxic serum?*

A.—Active immunization with diphtheria or tetanus prophylactics may be less effective, or in some circumstances ineffective, if the first dose is given soon after, or at the same time as, an injection of the corresponding antitoxic serum. The antitoxin neutralizes some of the toxoid in the prophylactic, and thus brings about a reduction in the effective dose. The extent of interference with immunization is dependent on the number of units of antitoxin given and the time elapsing between this injection and the first dose of diphtheria or tetanus prophylactic.

There is little reliable evidence of the time intervals which should elapse between an injection of antitoxin and the first dose of a course of active immunization. It is, however, probable that: (1) If a dose of 1,500 units of diphtheria or tetanus antitoxin is given at the same time as, or at any time within three weeks before, the first dose of the corresponding prophylactic, the latter will have little effect, and should be followed by a full course of three injections starting one month later. If active immunization is delayed until four weeks or more after the injection of antitoxin, it should be satisfactory to proceed with the normal course. (2) If a dose of 5,000 units is given, active immunization should be delayed for seven weeks or more. (3) In cases where patients have received large therapeutic doses of 200,000 units of tetanus antitoxin, active immunization with tetanus toxoid should not be attempted until at least four months have elapsed since the last injection of antitoxin.

It is extremely important to ensure that a full course of active immunization is given, followed by the normal boosting doses.

Chlorine Gas Poisoning

Q.—*I am medical officer to a factory where new processes are to be introduced which involve the possibility of chlorine gas poisoning. I should be grateful, therefore, if you could give me details of the latest methods of treating such cases.*

A.—The latest treatment for gassing by chlorine is to be found on Label A of the excellent series of labels for gassing casualties issued by the Association of British Chemical Manufacturers, 166, Piccadilly, London, W.1, and the inquirer is recommended to obtain a supply of these labels, one of which should be attached to each case of gassing sent to hospital. The following are the details recommended on Label A:

First Aid Already Given (after Removal from Exposure).—(*a*) Remove contaminated clothing. Loosen remaining clothing. (*b*) Keep lying down and warm. (*c*) Mouth-wash and gargle with sodium bicarbonate (1 dessertspoonful to 1 pint (560 ml.) of water). This solution of water may be used for eye or skin irrigation when necessary. (*d*) Give hot drinks—for example, milky tea or coffee. (*e*) Transport by car, stretcher, or ambulance.

Immediate Treatment Recommended (in Addition to Above).—(*a*) Oxygen through a face mask. (*b*) Inhalation of friar's balsam (1 teaspoonful to 1 pint of water). (*c*) Linctus diamorphinae camphoratus (*B.P.C.*, 1934) 1 drachm (3.5 ml.) repeated as often as needed. Of use in mild cases only. (*d*) Venesection 10–20 fl. oz. (280–560 ml.) blood where there is evidence of right heart embarrassment. (*e*) Cardiac stimulants if indicated—for example, nikethamide 1–3 ml.

Subsequent Treatment Recommended (after Immediate Distress has Subsided).—(*a*) Rest in bed until respiratory embarrassment has ceased. (*b*) Repeat oxygen inhalation if respiratory stimulation is necessary. (*c*) Careful observation for onset of pulmonary oedema. (*d*) Expectorant mixture as required.

Treatment of Disseminated Sclerosis with Histamine and Curare

Q.—*I would be grateful if I could have some information about the treatment of disseminated sclerosis with histamine and curare. Have these drugs a place in rational therapy?*

A.—Daily intravenous injections of histamine diphosphate were used in the treatment of disseminated sclerosis by Horton and his colleagues[1] in 1944. There was improvement in some patients especially in the early stages of the disease, and this was attributed to vasodilatation, but the difficulty of evaluating the results on account of the possibility of spontaneous remissions was realized. Curare has been used in an effort to reduce spasticity in cases of spastic paraplegia whether due to disseminated sclerosis or other disorders of the spinal cord. The results have on the whole been disappointing, and toxic side effects are fairly frequent.[2] A carefully controlled study[3] of the use of D-tubocurarine in oil and wax given by intramuscular injection in the treatment of spasticity resulting from spinal cord injuries indicated that no beneficial results were obtained.

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1 Horton, B. T., Wagener, H. P., Aita, J. A., and Woltman, H. W., *J. Amer. med. Ass.*, 1944, **124**, 800.
2 Clarke, C. A., and Hotston, R. D., *British Medical Journal*, 1948, **1**, 289.
3 Kuhn, R. A., and Bickers, D. S., *New Engl. J. Med.*, 1948, **238**, 615.

Senile Warts

Q.—*What is the cause and treatment of pigmented spots on the forehead of a woman which have appeared since the climacteric and are increasing in size? She is in excellent health, but her employment is such that she should look attractive. She can disguise the spots with make-up, but is worried about their increase in size.*

A.—The pigmented spots are probably seborrhoeic (or senile) warts, which usually have a yellow, brown, or black greasy and slightly rough surface. If there is any doubt of their identity, biopsy would be wise. Seborrhoeic warts may be treated by gently rubbing the surface with a cotton applicator moistened, but not dripping, with trichloracetic acid, the normal skin around being protected by a film of petroleum jelly and care being taken to protect the eyes. Alternatively, they may be curetted after the base of the lesion has been infiltrated with local analgesic. Freezing with solid carbon dioxide snow is sometimes useful.

Noradrenaline in Cardiac Infarction

Q.—*Is noradrenaline useful in the treatment of shock following cardiac infarction? If so, how should it be given?*

A.—Yes. The drug should be given by intravenous injection in a strength of 2 to 8 ml. of 1/1,000 L-noradrenaline bitartrate per half to one litre of 5% dextrose saline, and at a rate of 30 to 60 drops a minute. For further information see the recent paper by Dr. K. Shirley Smith and Dr. A. Guz.[1]

REFERENCE

1 *British Medical Journal*, 1953, **2**, 1341.

Drug Claimed to Influence Cholesterol Metabolism

Q.—*A French drug, containing phenylethylacetamide is alleged to have an inhibitory effect on endogenous cholesterol metabolism, and thus to be indicated in arteriosclerosis. Is there any scientific basis for such a claim?*

A.—There is no scientific basis for the use of phenylethylacetamide which is in any way established, but a hypothesis has been put forward by Cottet, Mathivat, and Redel[1] suggesting that this substance might act in the body as a competitor for acetyl groups taking part in the formation of acetylcoenzyme A. They suggest that the combination phenylethylacetylcoenzyme A might be particularly stable. The formation of such a substance, stable but inactive, would lessen the formation of the higher fatty acids, and in some such way reduce the formation of cholesterol. The authors have administered phenylethylacetamide to groups of patients who had a raised blood cholesterol, and they record a mean fall in the cholesterol in these groups during the course of four to eight weeks. The administration was oral, and was unattended by any side-effects apart from slight disturbances of digestion. The results would seem to require confirmation.

REFERENCE

1 *Presse méd.*, 1954, **62**, 939.

NOTES AND COMMENTS

Effects of Prolonged Thyroid Administration.—Mr. V. H. RIDDELL (London, S.W.1) writes: In the answer to the question under this heading ("Any Questions?" April 30, p. 1106) I think attention should be drawn to the danger of Graves's disease arising after prolonged thyroid administration. Seventy such cases have recently been collected and reported by E. C. Bartels and Gordon K. Huggins.[1]

REFERENCE

1 *Lahey Clin. Bull.*, 1955, **9**, 81.

OUR EXPERT replies: As the effect of thyroid therapy on the thyroid gland is to render it inactive, I find it difficult to believe that such treatment may eventually result in overactivity of the gland and be, as Bartels and Huggins assert, an aetiological factor in the production of Graves's disease. If thyroid therapy *were* an aetiological factor we should see the occurrence of Graves's disease during and after its use far more frequently than is reported. In my opinion the occurrence of Graves's disease in these circumstances is fortuitous.

Prognosis in Aplastic Anaemia.—Dr. GEORGE DISCOMBE (London, N.W.10) writes: With reference to your question and answer on this subject (May 28, p. 1353) the following remarks may be of interest. I suggest that the patient who needs 50 pints (28 litres) of blood in four months suffers not merely from a pancytopenia but also from some occult haemolytic (or haemoclastic) process: since the average life of a red cell is about 110 days, the expected requirements of simple aplasia are only about 1 pint every nine days, or about 14 bottles in four months. One of our patients was admitted almost *in extremis* and needed 17 bottles in the first 42 days after admission, but during the next 63 days he needed only 9 bottles; during the last 163 days he has received only 19 bottles, and is earning his living, having received 65 bottles in 13 months.

When we find transfusions cause distress, due either to apprehension or to severe physical reactions, we cross-match every bottle of blood with the greatest care in saline, albumin, and by the antiglobulin technique; and administer, about an hour before the transfusion is started, an antihistamine such as mepyramine maleate (50 or 100 mg.) or promethazine hydrochloride (25 mg.). Apprehension is allayed and reactions are minimized.

In some drug-induced pancytopenias we have seen a similar picture of combined aplasia and blood destruction: the haemoclastic process was not accompanied by jaundice and was not affected by A.C.T.H. or cortisone. In one case splenectomy was followed by a dramatic reduction in the need for blood, though the platelet count remained low and the patient died a few weeks later from cerebral haemorrhage. Some patients with pancytopenia may be benefited by splenectomy, as emphasized by Whitby and Britton (*Diseases of the Blood*, 7th ed., p. 472).

Correction.—In the medico-legal report (*Journal*, May 28, p. 1347) and in Mr. R. J. Clausen's letter (*Journal*, June 18, p. 1478) "Magill tubes" were incorrectly referred to as "McGill tubes."

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